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THE MEDICAL JOURNAL OF AUSTRALIA



VOL. I.—30TH YEAR.

SYDNEY, SATURDAY, JANUARY 9, 1943.

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SUPPLEMENT NUMBER 6 ON WAR MEDICINE AND SURGERY:

The Supply and Use of Blood and Blood Substitutes.

LYMPHOGRANULOMA INGUINALE: HISTORICAL REVIEW AND PATHOLOGICAL ASPECTS.¹

By H. F. BETTINGER,
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Melbourne.

As the disease which is going to be the subject of the symposium tonight is largely unknown in this country, it may be best to commence the discussion with a definition. The most concise one I have found is given by Stannus in his comprehensive monograph, and with some slight modifications it is as follows. The sixth venereal disease, as he calls it, may be defined as a human contagious disease, acquired venereally, possibly more common in warm climates. It is due to a filtrable virus, communicable to certain laboratory animals. It is characterized by a small, often transitory, commonly herpetiform, initial inoculatory lesion on the (external) genitalia. This is followed by the development in the regional lymphatic glands and the adjacent connective tissue of a characteristic subacute or chronic inflammatory, neo-formative reaction, with the production, in the majority of the cases, of small foci of suppuration. It is associated generally with constitutional symptoms, which may include lassitude, prostration, fever, sweats, anorexia, loss of weight, rheumatic affections and skin reactions. The adenopathy in the male and in a small proportion of females is localized in the inguinal or inguino-crural-iliac groups of glands, giving rise to the syndrome known as climatic bubo or *lymphogranuloma inguinale*. In a great proportion of women and in a number of men localization in the intrapelvic glands occurs. Spread from these results in the production of a series of conditions which are generally referred to as the genito-rectal syndrome. The most important manifestation is the development of rectal strictures.

Before I proceed to my main subject, the discussion of the pathological aspects of the disease, a short historical review may be appropriate. Descriptions of the disease can, according to Hellerström, be found in the medical writings of old Greek, Roman and Arabian authors. Galenus and Celsus seem to have been familiar with this particular form of bubo. John Hunter's treatise "on the venereal disease" (1786) closes the first chapter of this history. Up to his time, all forms of bubo, however clinically different, were considered to be manifestations of the one venereal disease.

From the middle of the nineteenth century onwards two groups of observers began, quite independently from each other, to differentiate a peculiar condition of the inguinal lymph glands from that following soft or hard chancre. The first group is composed of ship's surgeons, medical officers of the navy or expeditionary military forces, and physicians practising in the colonies or in foreign countries in warm climates. Reports in an ever-increasing number deal with this form of bubo, first designated as *boubon d'emblée*, later on as *inguinal lymphadenitis* and finally, since about 1900, as *climatic bubo*—a term coined by Scheube when working in Japan. This development culminated in a paper by Müller and Justi, published just before the outbreak of the first world war. This paper contains the most complete and concise description of the disease as seen by this group of observers in the warmer climates.

Parallel to this line of development, but quite independently of it, another had commenced even at a slightly earlier date in countries of the temperate zones. William Wallace, of Dublin, is probably to be credited with first having clearly pointed out a group of indolent buboes which ran quite a different course from those regularly seen following soft and hard chancre. Although he deals with them still under the heading of syphilitic buboes, he considers the possibility of their having a different origin. During the following decades reports are published from various European countries and from America mainly attempting to differentiate the condition now mostly designated as *strumous bubo* from other

¹ Part of a symposium held at a meeting of the Victorian Branch of the British Medical Association on August 5, 1942.

venereal affections. Further progress is marked by two outstanding papers published about 1900—one by Klotz, dealing with observations in New York, the other by Nélaton, reporting similar observations in France. This development reached its conclusion in 1913, when Durand, Nicholas and Favre, of Lyon, published their paper on "*Lymphogranulomatose inguinale subaigüe*".

Thus, at the outbreak of the first world war, climatic bubo and also *lymphogranuloma inguinale* were established as entities, well differentiated from the other venereal diseases, which by that time had become not only clinical but also aetiological individualities. It seems astonishing that during this development no serious attempt had been made to correlate the two conditions. An explanation for this may be found in the few points of contact which workers in the field of tropical medicine and venereal diseases specialists in the home countries have with each other.

After the first world war, which had led to an interruption of further work on this subject, a paper by Phylactos, a pupil of Durand, Nicholas and Favre, gave a complete summary of the observations of the French school. The next few years saw reports coming in from every quarter of the globe. The following occurrences of the disease as described by the French authors were confirmed:

- 1922 in Rumania.
- 1923 in Switzerland, Spain and Italy.
- 1924 in United States of America.
- 1925 in Germany, Poland and Denmark; a doubtful case is reported from Great Britain.
- 1926 in Portugal.
- 1927 in Sweden.
- 1928 in Norway and Finland.
- 1932 in Greece; the first certain case from Great Britain is reported.

Two outstanding contributions were made during this time. The first was in 1925, when Frei published the results of his intracutaneous test. This has, apart from becoming a most valuable diagnostic aid, made it possible to link up climatic bubo and *lymphogranuloma inguinale*. It has been shown by cross-testing that both are actually one and the same disease. The other outstanding contribution was that by Hellerström and Wassén, in 1930. They were the first to show conclusively that the causative agent of the disease was a virus, which could be transmitted to certain laboratory animals, and which produced in them typical lesions, although to some extent of a different nature from those occurring in man. Their work was later confirmed and amplified by Levaditi in France and by Findlay in Great Britain.

How is the position with regard to the spread and the significance of the disease at the present day? It is established that *lymphogranuloma inguinale* occurs in practically every European country and in North and South America; it is common amongst the native populations of Asia and Africa. It is so widespread that from a public health point of view no more can be done about it than about venereal diseases in general. But unlike most of them, *lymphogranuloma inguinale* in the form of the genito-rectal syndrome is, at least for the time being, an incurable disease leading to an early termination of life in a high percentage of such cases. This gives *lymphogranuloma inguinale* its special importance. The United States of America already face a serious problem on account of the wide spread of the disease amongst the coloured population.

It may have been noticed that up to this point nothing has been mentioned about the occurrence of the disease in Australia. If one could rely upon published reports, one would have to say that *lymphogranuloma inguinale* has no significance for us. Apart from the demonstration of a few more or less proved cases at some medical meetings, there are no published reports of the disease in this country. Stannus, however, mentions in his monograph a personal communication by J. Vere Arkle, who had seen a number of cases in the gold-mining district of Kalgoorlie as early as 1908. It is most likely that cases are occurring sporadically in the capital cities and the industrial districts, but that they have not been recognized as such.

It is, nevertheless, probable that the disease has spread much less widely than in other countries. The situation has, however, been radically altered within the last year. The influx of a large number of men into the country who have been exposed to the infection in the Middle East, in the Near North or in America, may easily lead to a spread of the disease through the civilian population. Until a month ago no definite case had been seen or heard of in Melbourne. It is quite certain that no patient suffering from the disease had been admitted to the Women's Hospital. At present, however, two such patients are in the wards of the Women's Hospital.

The medical profession and the public health authorities will therefore have to find an answer to the question—and the purpose of this symposium is to provide all the necessary information—whether it is already too late to check successfully a spread of the disease through the country, whether we shall have to be content with diagnosing the condition and treating it as well as we can, or whether there is still a chance of preventing the disease from obtaining a firm foothold in this country.

One word about terminology: the history of *lymphogranuloma inguinale* as just outlined has been responsible for a large number of names being given to the disease. Hellerström enumerates thirty of them, still ending his list with "etc." None of the names is really a good one; all of them either cover only parts of the condition or are too similar to names established for other diseases. *Lymphogranuloma inguinale* has, however, become the most widely adopted designation in the publications of British and continental writers, whilst in America there is a certain tendency to prefer to call the condition *lymphogranuloma venereum*. This term being too similar to *granuloma venereum*, the latter is now sometimes in American papers called *granuloma inguinale*. For the purpose of this symposium the term *lymphogranuloma inguinale* will be used throughout to designate the disease as defined in the beginning, while *granuloma venereum* will be used for the tropical venereal disease in which the characteristic Donovan bodies are found.

Turning now to the main subject of this part of the symposium, the pathology of *lymphogranuloma inguinale*, it will be necessary to discuss the various manifestations of the disease separately. When the initial lesion, as most often happens, is herpetiform, the main changes are found within the epithelium. Parts of the superficial layers may be destroyed; there is much intercellular and intracellular oedema. A small cavity may be formed, filled with cellular debris, and surrounded, not by granulation tissue, but by an altered connective tissue filled with lymphocytes. Plasma cells, cells with two or more nuclei, are seen, but polymorphonuclear cells appear only in response to secondary infections. In other more advanced cases, processes more like those to be described in the lymph glands can be found. Altogether, the initial lesion is not so characteristic as to allow a diagnosis to be made with certainty.

When the infection reaches the inguinal lymph glands a typical bubo develops there, a detailed clinical description of which will be given later. If, then, such a packet of glands is removed surgically, its examination reveals characteristic features. The first of them is a plastic peradenitis, which glues all the glands together. The peradenitis may be an unspecific chronic inflammatory reaction, or the specific process may spread from the glands into the fibrous tissue around them, leading here to similar changes as in the glandular tissue. On section, the glands are often studded with tiny abscesses, many of them having a distinct stellate shape (Figure V). In other cases the glands seem to be swollen and are of a peculiar reddish-blue colour.

On microscopic examination, one is surprised not to find the typical abscess structures. Instead, one sees formations which are mainly composed of epithelioid cells. The smallest may consist of nothing but epithelioid cells, perhaps with an occasional giant cell of the Langhans type. As soon as these areas become somewhat larger, central necrosis occurs, and the epithelioid cells take up a palisade arrangement around the area of necrosis. This necrosis is

usually finely granular in type, but not so homogeneous as in tuberculous caseation. The next step of development is that polymorphonuclear cells immigrate into the centre through the epithelioid cell wall, and the lesion now assumes the appearance of a tiny abscess surrounded by a layer of epithelioid cells which decreases in thickness with the growth of the abscess (see Figures VI, VII and VIII).

This is the pathognomonic lesion. It can be well differentiated from other conditions which lead to epithelioid cell proliferation. In tuberculosis, for example, a young tubercle may be rather similar to a *lymphogranuloma inguinale* lesion; but as soon as central necrosis sets in the structures become quite different—tuberculous caseation on the one hand, fine granular necrosis with polymorphonuclear cells in increasing numbers on the other hand. *Lymphogranuloma inguinale* lesions are usually larger than individual tubercles; more extensive areas of tuberculous caseation have no resemblance to *lymphogranuloma inguinale* structures. Syphilitic gumma also have a different form of necrosis; the epithelioid cell border is not so well developed in them; in *lymphogranuloma inguinale* one does not see the fibrous tissue proliferation which surrounds the gumma. Rare conditions leading to epithelioid cell proliferation, such as leprosy and Schaumann-Boeck's sarcoidosis, can easily be excluded. Leprosy leads to tubercloid structures in the skin only, but not in lymph glands; sarcoidosis is characterized by large numbers of individual tubercles with little or no caseation. It may be added that the *lymphogranuloma inguinale* lesions bear no resemblance to the findings in Hodgkin's disease.

Let me add one further detail about the histological findings. In a number of cells from typical lesions inclusion bodies can be seen. It has, especially before the virus was actually found, been debated whether they are but cellular debris in phagocytes or the virus itself. There can be no doubt that many of them are nothing but cellular debris; but as it has been shown that the *lymphogranuloma inguinale* virus is large enough to be seen under the microscope, the other possibility cannot be excluded, and a decision will have to be made at each observation.

The other main manifestation of *lymphogranuloma inguinale* is the so-called genito-rectal syndrome. It occurs, as was stated before, more commonly in women, but also in men. The reason for the difference is apparently that the primary lesion in women is frequently localized in the upper part of the vagina or the cervix; this, by the way, explains why it is so seldom noticed. The lymphatics draining this area do not lead to the inguinal glands, but to intrapelvic glands. Frequently enough their involvement escapes notice. The first symptoms often arise only when by further lymphatic spread the process has reached the rectum. Patients often first seek medical advice with an already advanced involvement of the rectum. The question has been discussed whether the rectum may not become primarily involved by an abnormal method of coitus. The fact that at least in Europe rectal involvement was most often found in prostitutes seems to point in this direction. Further studies, especially histological examinations, have, however, shown that this way of infection is probably not a common one.

If a patient presents herself at a moderately advanced stage of rectal involvement, one usually finds a stricture within the reach of the exploring finger. Ulceration of the mucosa is often present; fistulae leading to the perianal skin or into the pelvic tissues are common. The rectum seems to be embedded in dense fibrous tissue. In more advanced cases, a considerable part of the rectum will have become a rigid narrow tube. Histological examination reveals in all stages widespread chronic inflammatory processes of an apparently unspecific nature; but in the great majority of cases the typical *lymphogranuloma inguinale* lesions (micro-abscesses surrounded by epithelioid cell layers) are seen. Sometimes the absence of features typical of any other disease has to be sufficient to suggest strongly the diagnosis of *lymphogranuloma inguinale*, which will then have to be verified by other means. In the examination of earlier cases it can usually be seen

quite well that the process spreads from the outer layers of the rectal wall towards the mucosa, and not in the other direction. On occasions extensive involvement of the rectum has led to further spread along lymphatics and veins into the abdominal cavity, and liver abscesses have been found in such cases.

An involvement of the female genital system itself, apart from the primary lesion, occurs in the following way. There is firstly the condition called *esthioméne*; it is a chronic, ulcerative, hyperplastic inflammation which involves the vulva and the perineum and may reach the anus. Although there is no doubt that the condition is part of the genito-rectal syndrome, investigations have shown that specific histological changes are but seldom seen; it is thought that the condition is more probably a sequel to the obstruction of the lymphatic system draining these areas than to the action of the virus itself. The same seems to hold for cases of parametritis and peri-metritis, which have been observed in association with rectal strictures. It is, however, certain that the specific disease can be found localized in the Fallopian tubes. There are some such reports in the literature, and one of the cases observed at the Women's Hospital is of this kind. The salient features of it are as follows:

A woman, aged twenty-four years, was admitted to hospital complaining of an offensive vaginal discharge present for the past twelve months. On examination, thickened adnexæ were felt on both sides of the pelvis, and as the diagnosis was considered to be chronic salpingitis, both Fallopian tubes were removed. Histological examination of the tubes revealed, apart from a widespread subacute inflammation of the mucosa, the typical *lymphogranuloma inguinale* lesions in the deeper layers of the tubal wall as illustrated in Figures IX and X.¹

Whether, in cases of involvement of the Fallopian tubes, the infection gets to them by way of the pelvic lymphatic network as it reaches the rectum, or whether an ascending infection occurs, as for example in gonorrhœa, is not yet certain. In any case, *lymphogranuloma inguinale* will have to be considered amongst the possible causes of chronic salpingitis.

To sum up: the *lymphogranuloma inguinale* virus produces a typical lesion, which is sometimes already seen in the primary infection, which is regularly found in the bubo, and which is seen in the great majority of cases of the genito-rectal syndrome. The diagnosis has to be made on histological grounds under conditions like ours, when Frei antigen is not available and the disease is largely unknown. In countries where the medical profession is familiar with the disease, histological examination is still a valuable means of confirming the clinical diagnosis.

CLINICAL ASPECTS OF LYMPHOGANULOMA INGUINALE.²

By FRANK M. McDONALD,
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Source.

To introduce a discussion of the clinical aspects of a disease, it may be a good idea first to give consideration to its source and answer the question: "Where does it come from?" As has been clearly pointed out by Dr. Bettinger, the disease *lymphogranuloma inguinale* has a world-wide distribution. Although it has been the tendency to state that the disease is endemic in certain countries in Europe and in certain areas in the Americas and Asia, this is not so important as the realization that the disease has been seen in practically all countries. The greater incidence of the disease in certain localities is

¹ The other case encountered at the Women's Hospital was a typical bilateral bubo. Figure IV of Captain MacDonald's paper shows it in its healing stage.

² Part of a symposium held at a meeting of the Victorian Branch of the British Medical Association on August 5, 1942.

primarily a local public health problem. In Australia, the incidence of *lymphogranuloma inguinale* is undoubtedly low. Much more important than the fact that the incidence is low, is the fact that the disease exists on this continent and therefore deserves to be as widely recognized and understood as possible. With the present increased traffic and increased intermingling of the peoples of this country with other lands and other peoples, it is quite possible that the incidence of *lymphogranuloma inguinale* will see a considerable increase. The source of *lymphogranuloma inguinale* is among people everywhere, and what is more pertinent to Australians, it is among people in Australia.

Infectivity.

The logical sequence to the fact that the disease is among people here and everywhere is consideration of its transmission and infectivity. There is no seasonal variation. Neither sex nor race appears to influence the incidence or distribution of the disease. The earliest treatises on the subject usually stated that *lymphogranuloma inguinale* was peculiar to the male sex. It is now known that this is not true, the confusion having arisen because of a difference in the course of the disease in the female, with fewer visible manifestations. Although the disease is more commonly seen in the coloured race, this greater prevalence is probably due to sexual promiscuity and high rate of exposure than to any intrinsic susceptibility on the part of the Negro. Although the age incidence is greatest among adults in the period of active sex life, there have been reports of children infected, apparently innocently.

Non-sexual contact infections are decidedly possible. Tongue and mouth lesions, associated with cervical or submaxillary lymph node involvement and positive reactions to the Frei test, have been reported by David and Loring in 1936, by Curtis in 1933, by Buschke and Curth in 1931. Hellerström described infection of the finger of a physician, whose axillary glands underwent the usual course of venereal lymphogranuloma. In studying the venereal transmission of the disease and the high preponderance of male victims, Bejarano and Calatayud, in 1933, found that 11% of 75 apparently healthy prostitutes gave strongly positive reactions to the Frei test, despite negative histories and absence of abnormality on examination. Small epidemics have been known to follow contacts with a single infected prostitute; there is some basis for believing that a woman may be a carrier of the disease without manifesting clinical evidence of actual infection.

From a practical standpoint, it is difficult to establish a workable basis for controlling the disease among persons with latent infections, even with the help of Frei tests. It is, on the other hand, worth while from a practical standpoint to give consideration to the duration of infectivity in the clinically active case. Just how long *lymphogranuloma inguinale* is infective for certain is as yet not fully worked out. There seems to be fairly general agreement that any oozing discharge from any part of the body of an infected subject may act as infective material. Primary lesions and draining buboes and sinuses are obviously such sources. In addition, discharge from the rectum has been shown to contain the active virus. In short, it seems to be true that the only lesion that should not be considered as potentially infective is an old, well-contracted scar.

Course.

As the chief means of recognizing *lymphogranuloma inguinale* is a knowledge of its course, let us direct our attention to what happens when infection takes place. The incubation period from the time of sexual contact until the first lesion appears is variously given by different students of the entity as from one to four weeks up to three months. In the male, the initial sore is most commonly observed on the coronal sulcus, but it may appear on the prepuce, on the glans, or in the urethra. In the female, the most common location is the posterior vaginal wall or the posterior lip of the cervix, although it may occur anywhere on the external genitalia. As a rule

the primary lesion is manifested by a small evanescent bleb. Phylactos distinguishes four other types: ulcerative, papular and nodular, and a rare variety which he called lymphogranulomatous urethritis. The primary lesion, even the herpetic-like bleb, is not often seen, and in women the portal of entry is almost invariably obscure. The primary lesion, whatever its type, is of short duration and heals spontaneously without scar formation. Occasionally, along with the primary lesion or shortly after its disappearance, there is a perceptible infiltration along the penis, sometimes associated with lymphoedema, sometimes with the appearance of a well-defined nodular lump on the dorsal aspect of the penis.

Commonly, the first change after the primary lesion, usually the first recognizable appearance of the disease, is enlargement of the lymph nodes in the inguinal chain. The duration of the interval between the primary lesion and involvement of the lymph glands is not well established. Prehn reported that in 5% of his cases, adenitis preceded the primary lesion. Most of the reports give the incubation period for appearance of the bubo as between ten and thirty days after the appearance of the primary lesion; it may range as high as seven or eight weeks, and Cole finds the buboes may not appear for three or four months after probable contact. Classical descriptions commonly state that unilateral inguinal involvement is more frequent than bilateral involvement, and that there is no predilection as to the side involved, regardless of the site of the primary lesion. In Cleveland, it has been our impression that bilateral involvement holds a substantial "edge" over unilateral involvement. The lymph nodes enlarge rather slowly and vary in size from a hickory nut up to nearly the dimensions of an adult fist. As the lymph nodes enlarge, they become tender to a moderate degree, and mat together to form a semifirm nodular, irregularly shaped mass running along just above Poupart's ligament (Figure I). The surrounding soft tissue becomes puffy and the overlying skin assumes at first an erythematous colour, gradually darkening to a purplish tinge. Miliary abscesses manifest themselves by forming several fluctuant pockets of pus. The small pockets coalesce to create large pockets and break through the skin, leaving a tender, sluggish ulcer. Multiple sinuses connect the suppurating glands with the surface (Figure II). Healing is slow, drainage persisting for any period from two months to two years. The entire area may be honeycombed with fistulous openings, discharging a thick, yellowish-white purulent exudate. The resulting cicatrices are thick and puckered (Figures III and IV).

During the height of activity, a low-grade fever with an elevation of temperature to about 100° F. is common; the temperature may run up to 106° F. Slight anaemia and slight mononucleosis characterize the blood picture.

Rather than the inguinal lymph nodes, the ano-rectal lymphatics may be involved, and for anatomical reasons this is particularly true in women. The chronic inflammatory response and lymphatic obstruction lead to rectal stricture, perineal distortion and pronounced lymph stasis or elephantiasis, to which the term *esthioméne* has been applied. The rectal stricture due to *lymphogranuloma inguinale* is localized to the lower ten centimetres of the bowel, and is generally not higher than six centimetres. It may be band-like or tubular. Early symptoms of rectal stricture observed by Vander Veer, Cormia and Ullery include constipation, pain, bleeding, incontinence of faeces and anal discharge. In twenty cases of proctitis and colitis, Goodman, in 1936, obtained seven positive reactions to the Frei test; he pointed out that all persons suffering from ulcerative colitis ought to be subjected to the Frei test, since some appeared to be suffering from *lymphogranuloma inguinale*. Chapman and Hayden (1938) reported thirty patients, four of whom had gastro-intestinal disease without anal stricture, three of them having localized proctitis and one regional ileitis.

Along with the local lymph node enlargement, one occasionally finds a generalized lymph node enlargement. Suppuration of the lumbar glands, extensive destruction of the psoas muscle and extension of the infection to articular surfaces and to the kidneys and adrenals of the

involved side are mentioned by Stokes. Cole speaks of involvement of the spleen, polyarthritis and generalized skin manifestations, such as *erythema nodosum*, eruptions like *erythema multiforme*, urticaria and scarlatiniform eruptions. Other manifestations of *lymphogranuloma inguinale* that have been reported include encephalitis, episcleritis, conjunctivitis, peritonitis, pelvic adhesions, salpingitis and other abdominal inflammations. These findings, then, constitute what is or may be found in *lymphogranuloma inguinale*.

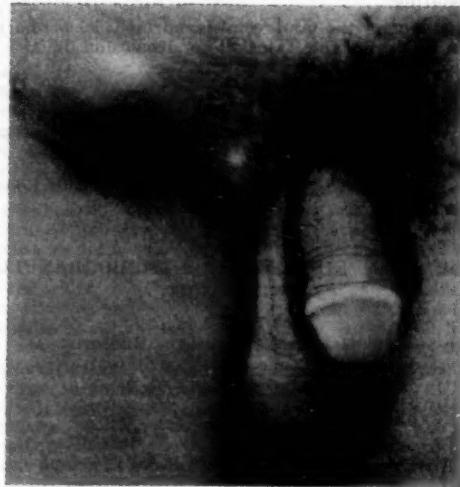


FIGURE I.

Lymphogranuloma inguinale bubo in the acute stage.

Diagnosis.

In any discussion of the disease *lymphogranuloma inguinale* it is, I think, fair to say that the disease with which it is most frequently confused is *granuloma inguinale*. The need for differentiation between these two entities is one in name only, a question of terminology.

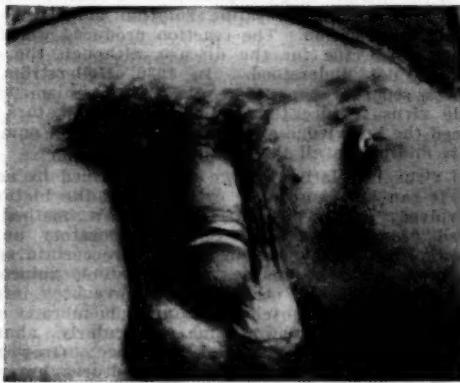


FIGURE II.

State of fistulization.

because clinically they are not at all similar. Because this confusion does exist, let me begin the discussion of differential diagnosis with a brief description of *granuloma inguinale*. It has been reported most often in British Guinea, the Fiji Islands and other tropical countries. It has been endemic in the southern parts of the United States of America for years. It is reasonable to suppose that it has made its appearance in Australia at some time

or other. It is most frequently seen in young Negroes. *Granuloma inguinale* begins with a small macule and develops into a papule; the skin ulcerates, producing a small, superficial ulceration. The condition progresses as a chronic, superficial, serpiginous, sclerosing, granulomatous ulceration. There is no formation of abscess at any time. It is exceptional for healing to occur spontaneously, if at all. Lymph nodes are seldom involved. The groins and genitalia are the common sites of involvement. This is the disease in which Donovan bodies are found. It is an entirely different condition from *lymphogranuloma inguinale*.

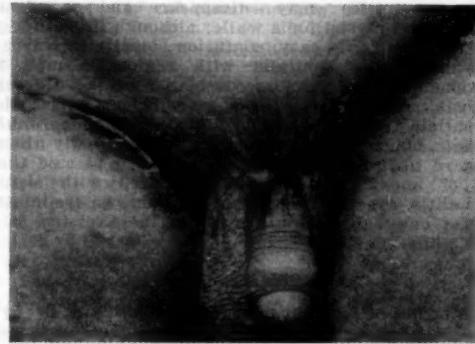


FIGURE III.

Healing state, characterized by the retraction of the forming scar.

On the other hand, there are several diseases which can be confused with *lymphogranuloma inguinale* from a standpoint of clinical findings; these diseases are the ones that have inguinal lymphadenitis in common with *lymphogranuloma inguinale*. To be specific in differential diagnosis, early syphilis, chancroidal infection, lymphoblastoma, tuberculosis and streptococcal infection are to be most often considered. Clinical differentiation is not difficult as a rule. *Lymphogranuloma inguinale* buboes, though often unilateral, are commonly bilateral; they are only a little tender, they mat together, they break down to form multilocular pus pockets and they are rarely

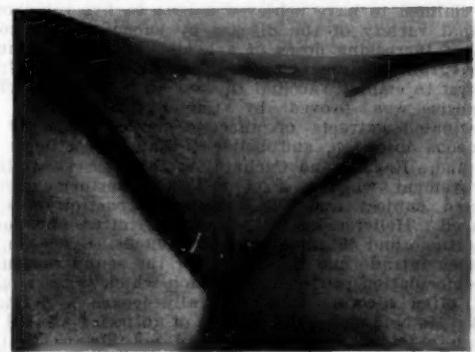


FIGURE IV.

Bilateral affection of the inguinal lymph glands in a woman during the healing stage.

accompanied by any sort of genital lesion. Chancroidal buboes (which sometimes closely resemble *lymphogranuloma inguinale* buboes) are unilateral and excruciatingly tender, with unilocular type of pus pocket formation and accompanied by the characteristic *ulcus molle* genital lesion; in addition, the chancroid skin test (Ito-Reinsterna reaction) produces a positive result in chancroid infection and no reaction in *lymphogranuloma*

inguinale. Inguinal lymph nodes in early syphilis are almost always bilateral, discrete and non-tender, and there is a primary luetic node on the genitalia or so-called secondary manifestation elsewhere. Lymphoblastoma lymph nodes tend to be not tender or only slightly tender; they are rubbery in consistency, usually freely movable, do not mat together and do not break down. Blood counts and lymph nodes biopsies are sometimes needed. Tuberculosis of the inguinal nodes is rare, but if it is present it sometimes closely simulates *lymphogranuloma inguinale*, and a search for the presence of acid-fast bacilli elsewhere should be made. The Frei test may be particularly helpful here. Streptococcal infection of the lower extremities may disappear and a femoral lymphadenitis persist for a while; although this differentiation should be fairly easy, confusion sometimes may arise. Neoplasm of the genitalia with regional lymph node involvement should also be considered in the differential diagnosis. *Herpes progenitalis* would be impossible to differentiate from the primary lesion of *lymphogranuloma inguinale*, but, of course, their sequelae are totally different. In regard to the systemic symptoms, let it be said that in cases of unexplained disease associated with signs of encephalitis, eye infection, mouth lesions, gastro-intestinal or lower bowel disorders, the use of the Frei test is well worth while.

Treatment.

Treatment of *lymphogranuloma inguinale* is by no means satisfactory yet. Of the general measures, rest in bed, the administration of adequate fluids by mouth, the application of heat to the lymph nodes (especially moist heat), aspiration of the pus pockets, the use of mild antiseptic wet dressings, such as a 1:8,000 solution of potassium permanganate to draining buboes and sinuses are reasonable procedures. In ano-rectal cases the use of a low residue diet, the administration of mineral oil or mild catharsis, and the employment of potassium permanganate solution (1:5,000) for enemas are usually recommended.

In early cases of bubo in which drainage has not yet become established and preferably unassociated with much pus pocket formation, simple surgical removal of the glands is held by many to be the best method of treatment. Another of us will comment more fully on this procedure.

There is some evidence that injections of Frei antigen are followed by more satisfactory results than other methods. The earliest report was made by Delbet, in 1923, who claimed to have achieved a cure in five cases of the inguinal variety of the disease by subcutaneous inoculations of increasing doses of a heated emulsion of human lymphogranulomatous glands. Gay Priesto, in 1927, was the first to employ vaccinal therapy in cases in which the diagnosis was proved by the Frei test; he used glycerinated extracts of affected glands given by subcutaneous injection, and believed that his patients were benefited. Ravaud and Cachera, in 1932, observed clinical improvement when a Frei test was performed on an infected subject and the cutaneous reaction was pronounced. Hellerström introduced the intravenous use of the antigen and obtained transient benefit. Grace, in 1937, deplored intradermal injections, for the sound reason that each inoculation produces a reaction which takes weeks to heal, often ulcerates and generally leaves a permanent mark. He held, since the potency of antigen prepared from human material was variable and not always available, that laboratory-prepared antigen, such as the mouse brain variety, was preferable. He found that the most satisfactory form of vaccine treatment was obtained by the alternation of continuous courses of subcutaneous and intravenous injections of Frei antigen with short rest periods at the end of each intravenous course. The intervals in both types of administration are twice a week, with increasing concentrations for eight to ten doses per course. Focal and constitutional reactions are common, and dosage is varied according to the reactions that appear.

In Cleveland it has been our experience that foreign protein therapy with attending temperature elevation, as produced by the intravenous administration of killed

typhoid bacilli, is often a useful addition to the aforementioned general measures.

The use of convalescent serum has been tried and has its supporters, although no striking changes have been brought about by it.

There are several claims of good results from the use of the "sulpha" drugs in the treatment of *lymphogranuloma inguinale*. In my own opinion, based on a few cases I have seen so treated, it has very limited value at the most.

Reports on the employment of antimony salts appear to be unexciting.

Treatment of the ano-rectal syndrome is primarily a surgical problem, and I leave its discussion in the very capable hands of Colonel McCally.

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LABORATORY FINDINGS IN LYMPHOGRANULOMA INGUINALE.¹

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THE laboratory findings in *lymphogranuloma inguinale* can be best discussed from two aspects: (i) the investigation of the aetiological agent, including its immunological aspects, and (ii) the laboratory tests that are readily available to the clinician.

The disease has been clinically recognized as a separate entity for about thirty years; it was not until 1925 that any biological diagnostic procedure was discovered. At that time Frei⁽¹⁾ perfected the intracutaneous test. This consisted of the intradermal inoculation of 0.1 cubic centimetre of bubo pus diluted in saline solution and treated by fractional sterilization. The reaction produced was found to be quite specific for the disease, although the exact cause was not understood. In 1930, Hellerström and Wassén⁽²⁾ reported that the causative organism was a filtrable virus. Since then numerous investigators have advanced the knowledge of the virus, and a brief summary of their findings is all that is appropriate here.

This virus is relatively large and is stained by aniline dyes. It can be seen in the cytoplasm of the histiocytes of involved tissue stained by Giemsa's method—the so-called granulocorpucles. Several laboratory animals are susceptible. The most susceptible are certain species of monkeys and the mouse, but hamsters, guinea-pigs, rabbits, cats, dogs and other animals have been infected. The virus grows on the chorio-allantoic membrane of the developing chick embryo, and particularly abundant growth occurs in the embryonic yolk sac. Growth and serial passage in appropriate tissue cultures have been repeatedly confirmed. Various strains of the virus show considerable variability in infectivity for laboratory animals. The virus is rendered non-infective if it is heated to 60° C. for thirty minutes.

Infection of man and laboratory animals is followed by (i) the development of cutaneous hypersensitivity to suspensions of the inactivated virus and (ii) the development of humoral antibodies demonstrable by neutralization tests in animals and also by complement fixation tests.

¹ Part of a symposium held at a meeting of the Victorian Branch of the British Medical Association on August 5, 1942.

Recently it has been found by animal experiments that the virus is antigenically related to the virus of meningo-pneumonitis, to certain types of primary atypical pneumonia, and indirectly to psittacosis.⁽¹⁾

There is also fairly definite evidence in mouse experiments that the virus is partially inhibited by the sulphonamide drugs.⁽⁴⁾

As can be seen, this virus has certain qualities which are shared by bacteria, shows considerable variation in the behaviour of different strains and is antigenically related to the viruses of meningo-pneumonitis, virus pneumonia and psittacosis. This opens a fertile field for investigation, which I should very much like Dr. F. M. Burnet to discuss later. (See comment by Dr. Burnet at the end of this paper.)

There are several laboratory and biological tests of value to the clinician in establishing the diagnosis of *lymphogranuloma inguinale*. By far the most important is the Frei test. The original antigen for this test consisted of bubo pus aspirated aseptically, diluted fivefold and sterilized by heating to 60° C. for two hours and again for one hour the next day. This was tested for sterility by cultural methods and then tested for activity on known patients and for specificity on normal subjects. Since it was difficult to obtain adequate material, Hellerström utilized the involved nodes, removed aseptically before open sinuses had developed. This material was ground in sterile sand with five volumes of saline solution, and the gross particles were removed by centrifugation.

In 1934, Grace and Suskind⁽⁵⁾ developed an antigen produced by intracerebral inoculation of mice. They subsequently emulsified the brain tissue in saline solution and inactivated it by fractional sterilization. This product, though active antigenically, gave a significantly large number of "false positive" reactions, due to normal mouse brain, so that a control with the latter is necessary. Mouse brain antigen has been available commercially for several years, although the non-specific reactions have rendered it somewhat less satisfactory than the original Frei antigen.⁽⁶⁾

In 1940, Grace, Rake, Geoffrey and Shaffer⁽⁷⁾ reported that when the infected chick embryo yolk sac was ground with nine volumes of saline solution, and this emulsion was centrifuged at slow speed, the supernatant fluid contained numerous elementary bodies. If the supernatant fluid was then centrifuged at high speed, and the sediment was resuspended in twenty times the volume of the original saline suspension, and 0.1% formalin solution and 0.25% phenol solution were added, a very effective antigen for the skin test could be obtained. They found it superior to mouse brain antigen. Subsequently Sulkin *et alii*⁽⁸⁾ confirmed the fact that it was superior to mouse brain antigen and to the original Frei antigen. The yolk sac antigen is commercially available under the name of "Lygranum", and is the preferable antigen. A control test with normal yolk sac must always be made at the same time.

In the performance of the Frei test 0.1 cubic centimetre of the antigen is injected intradermally into the flexor surface of the forearm, and an equal amount of control material is injected several centimetres above or below. The result of the test is read in forty-eight to seventy-two hours. A positive reaction consists of a firm papule greater than five millimetres in diameter, and the control reaction must be absent or markedly smaller (Figure XI). There is usually some surrounding erythema; but this should be disregarded. As a general rule it may be said that a more accurate reading of the Frei test can be made by palpation than by inspection. However, at times pronounced reactions occur, consisting of a nodule up to 2.5 centimetres in size surmounted by a large vesicle. The reaction usually becomes obvious within two weeks of the onset of symptoms, and in most instances it persists for life. Therefore caution in interpreting a positive result is necessary if there is a history suggestive of previous adenopathy or rectal disease. Also, transient positive results have been reported in psittacosis and certain types of virus pneumonia, and they have been shown to occur in laboratory animals.

The laboratory finding next in importance in the confirmation of the diagnosis is histological examination of biopsy material from a lymph node.

Another important confirmatory test is the determination of the serum protein content. In most cases of *lymphogranuloma inguinale*, there is a significant elevation of the serum globulin level. Kampmeier⁽⁹⁾ found that the serum protein content of 92.5% of 67 patients at some time in the course of the disease exceeded eight grammes per 100 cubic centimetres, the serum globulin content being in excess of three grammes. The serum globulin content, particularly in cases of the genito-rectal syndrome, may reach extremely high values, at times exceeding eleven grammes per 100 cubic centimetres. The serum albumin content usually is normal or slightly reduced. This disturbance of serum proteins tends to return to normal with clinical cure.

If the determination of serum protein content is not possible, a simple though less sensitive substitute may be used, known as the formol-gel test. It is carried out as follows. Two drops of a 40% formaldehyde solution are added to one cubic centimetre of the patient's serum in a clean eight-millimetre test tube. The tube is then sealed with a cork, and the contents are observed in two hours and twenty-four hours. A positive reaction consists of gelation of the serum. The result is usually positive when serum globulin values are in excess of four grammes per 100 cubic centimetres, and about 40% of results are positive when serum globulin values lie between 3.4 and 4.0 grammes per 100 cubic centimetres.⁽¹⁰⁾ Although similar changes occur in other diseases, notably kala-azar and multiple myelomata, it is unusual to obtain such findings in diseases clinically resembling *lymphogranuloma inguinale*.

Although the finding is not valuable diagnostically, it should be mentioned that an increased sedimentation rate is present, and a moderate leucocytosis with a relative mononucleosis is common.

A word of caution is necessary in interpreting the results of sensitive complement fixation or precipitin tests for syphilis in the presence of *lymphogranuloma inguinale*. Transient "false positive" results occur in from 5% to 10% of instances. In the absence of definite proof of syphilis, it is wise to await improvement of the patient's condition and to make serological tests before coming to a decision regarding the presence of syphilis.

In conclusion, it should be emphasized that the differential diagnosis of penile lesions with inguinal adenopathy and of inguinal adenopathy of venereal origin is extremely difficult clinically, and that full resort should be made in each case to the Frei test, the chancre skin test, dark field examination and serological tests for syphilis before treatment is initiated.

COMMENT.

(F. M. Burnet.)

From the academic point of view, this virus is of particular interest at the present time. It has been recently shown that there is a group of microorganisms, including those responsible for *lymphogranuloma inguinale*, meningo-pneumonitis of mice, psittacosis and some forms of atypical human pneumonia,⁽¹¹⁾ which by both morphological and immunological criteria are obviously closely interrelated. These microorganisms conform to the definition of viruses; but their elementary particles are considerably larger than those of any other of the viruses, and in two important respects they resemble bacteria. They are stained like bacteria and rickettsiae with stains of the Castaneda type, and in at least one instance (*lymphogranuloma virus*) they are partially inhibited by the sulphonamide drugs. No other viruses show these characteristics, and it is probable that we can regard the group as representing an intermediate stage between the true viruses and the bacteria.

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PYODERMA ULCEROSUM TROPICALUM.

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UNDER the new medical term "pyoderma ulcerosum tropicalum" is described an infectious skin disease which affected a great number of men serving in the Northern Territory of Australia, causing a considerable amount of disability. Many names, such as "infected sores", "tropical ulcers" and "impetigo bullous", were applied to this group of lesions. I have had about 300 cases under my observation and treatment, and it seems that they all have the same history, the same aetiology and the same pathogenesis, and therefore I consider the condition to be a new clinical entity.

History.

This complaint appears in certain areas of the Northern Territory, which have a tropical character, and also in certain months of the year, from about December until the end of May, during time when the climate is hot and humid. The vegetation throughout this period is flourishing and is constantly moist. During the dry season, when the vegetation dies, the incidence of this complaint falls gradually until it disappears almost completely.

It occurs more often among the infantry, who when on the march through the bush wear shorts and short-sleeved shirts and socks, sometimes even socks, and are thus more exposed to abrasions and other means of inoculation by microorganisms.

The predisposing factors are lowered resistance from former illness or from poor and insufficient food, especially lack of vitamins. Furthermore, hardship and fatigue make the men much more susceptible and prolong the course of the sickness. This can be demonstrated by the comparative freedom from infection of certain Allied troops who have been stationed adjacent to a particular battalion, of which one-third of the personnel were suffering from these sores. I assume that the reasons for this lack of infection were protective clothing ("giggle suit") and also better food.

Description.

An eruption starts mainly on exposed parts around the hair follicles on the extensor surfaces, such as the knees, the upper parts of the legs, the forearms and the backs of the hands. The face, the neck, the palms and the plantar surfaces of the feet are free. In most cases the infection can be traced to scratches from vegetation or

barbed wire, and probably to the scratching of mosquito bites and "prickly heat". The incubation period is short, varying from six to twelve hours. The lesion commences with one or more discrete vesicles, which after a few days increase in numbers but do not coalesce. Initially there is an area of acute inflammation, reddish in colour, surrounding one or more vesicles varying in size from that of a threepenny piece to that of a florin. The vesicles have a whitish appearance, but contain straw-coloured fluid. Soon they break, forming a superficial circular ulcer with a red base spot by greenish-yellow discharge from the hair follicles, mainly at the periphery. The edges of the ulcer are thickened in varying degrees, surrounded by a cellulitis which is painful and itchy. Approximately half the patients who had multiple sores had inguinal or axillary lymphadenitis.

When left alone, the ulcer becomes covered by a firm, yellowish crust; if this is punctured, a sero-purulent discharge is liberated, but in no case was a pyogenic membrane present. Furthermore, under the crust the ulcer is extending and deepening. Eventually the crust breaks, exposing a deep ulcer, varying from one to several inches in diameter, which may be filled at a later date by friable granulations (see the accompanying figure).



Figure showing ulcer.

Etiology.

Numerous bacteriological and pathological examinations were carried out on different occasions. In all, about 60 such examinations were made. That the condition is infectious and can be transmitted was demonstrated by an auto-inoculation, by the inoculation of vesicle and ulcer material intradermally, and by the swabbing of material into an abrasion on five subjects (including myself) who were free from any skin complaint whatsoever. The characteristic sore and ulcer were successfully reproduced.

Direct smears from these lesions, stained by Gram's method, were invariably found to contain polymorphonuclear pus cells and Gram-positive cocci. In no smears were spirochaetes or fusiform bacilli present. In scrapings stained by Giemsa's method no protozoal infections were found. Skin from the margins of spreading ulcers contained no fungus, mycelium or spores. Cultures on horse blood agar were made in every case. In those cases in which the ulcer was first cleansed with alcohol and acetone, and the swabbing was taken from under the epithelium at the edges of the lesion, pure growths of haemolytic streptococci were obtained. In other cases, in which the swabbing was from the base of the ulcer, which had not first been cleansed, a mixed growth of haemolytic streptococci and *Staphylococcus aureus* was obtained, with the streptococcus predominating. In early cases, of a duration of a week or less, pure growths of haemolytic streptococci were obtained.

In four cases, *Staphylococcus aureus* alone was recovered. In two of these cases it was several hours before cultures were made, and in the other two, though the swabs were not more than an hour old, they had dried. It was not

possible to repeat the examinations in these cases, but the lesions were similar to the general type and in more favourable circumstances might have produced streptococci as well. Swabbings from the experimental inoculations yielded haemolytic streptococci with a few colonies of *Staphylococcus aureus*.

The streptococci were subcultured upon maltose horse blood agar and proved to be Group A haemolytic streptococci. The *Staphylococcus aureus* cultures were "coagulase positive".

The conclusions drawn were that the organism responsible was a haemolytic streptococcus, a *Staphylococcus aureus* infection being superimposed.

Differential Diagnosis.

The diagnosis of *pyoderma ulcerosum tropicalum* is easy, especially when the lesion assumes epidemic proportions, and is based on its initial appearance. In isolated cases microscopic and bacteriological examinations should be made, a final diagnosis being achieved by process of exclusion of the following diseases:

Oriental Sores.—Oriental sores start with purple, indurated nodules, which after a prolonged period of desquamation produce an indolent ulcer with indurated borders and unhealthy granulations, due to the parasite known as *Leishmania tropica*, occurring in Malaya, India and Africa.

Septic Sores ("Barcoo Rot").—Septic sores begin with a vesicle, which on bursting leaves a superficial ulcer with thickened margins, and they are mostly of diphtheritic origin. This disease caused a considerable amount of disability in the Australian and British armies stationed in Egypt and Palestine during the last war. It has been noticed in Queensland.

Tropical Ulcer (Tropical Phagedena).—Tropical ulcer is characterized by the presence of a chronic sore, covered with a false membrane of purulent and necrotic tissue which, on being cleaned away, leaves a raw base surrounded by indurated edges. Schaudin's spirochaete is believed to be the cause. It is prevalent in tropical Africa and Indo-China.

Tropical Ecthyma of Castellani.—Tropical ecthyma is a nodular lesion which, after breaking down, forms an ulcer with undermined edges; it is due to a *Staphylococcus tropicanus*. It is prevalent in Ceylon and Indo-China.

Impetigo Contagiosa.—*Impetigo contagiosa* is a superficial vesicular eruption of a streptococcal nature, which after rupture forms a yellow crust, loosely stuck on the skin.

Impetigo of Bockhart.—*Impetigo of Bockhart* is a purulent perifollicular inflammation seen on the lower parts of the limbs, forming a very small scab. It is caused by *Staphylococcus aureus*.

Treatment.

The treatment should be prophylactic, general and local. As the complaint is epidemic in the wet season and incapacitates a large number of troops, every effort should be made to prevent it. The exposed parts of the body should be protected against abrasions and mosquito bites by the wearing of long trousers and long-sleeved shirts. Daily showers with change of clothing, and weekly boiling of the garments with sterilization should be compulsory. Antiseptic lotions, such as acriflavine (1/1,000) in normal saline solution, should be applied to abrasions of the skin at the earliest opportunity. The troops should be educated regarding the menace of this infection, in order to halt the progress of a trivial lesion that may eventually become an incapacitating ulcer.

Where "iron rations" are being used, vitamin C (ascorbic acid) in tablet form is required in a daily dosage of 500 to 1,000 international units.

The excessive perspiration leads to depletion of the body's chloride. The daily administration of 60 grains of sodium chloride in the form of tablets was found necessary to maintain the osmotic equilibrium of the cells.

General treatment consists in placing the patient in hygienic surroundings, and in giving him good food supplemented by "Marmite", citrus fruit juice or tomato

juice. Deficiencies of vitamin A may be remedied by the use of fresh milk and butter.

Oral administration of calcium gluconate or calcium lactate was found helpful in cases in which healing was slow, and in which pigmented scars were present. When multiple sores and ulcers are present, the patient should be put to bed, and the affected limb should be bandaged and elevated to avoid the complication of lymphadenitis.

The local treatment varies and depends on whether the sores are early or in the ulcerative state. In the early stage the best treatment seems to be to open the pustular vesicles and to remove the scabs with keratolytic ointments, such as "Vaseline" with 3% salicylic acid, and then to scrape away all the exfoliating epidermis at the margins. At the same time the hairs on the margins and the floors should be removed and the ulcers lightly painted with pure (or 50%) carbolic acid. The surface of the lesions should be daily cleansed with saline solution, and Whitfield's ointment should be applied. This has been found most effective. Usually after four days the discharge stops, and zinc cream with acriflavine (1/1,000) may be applied every day until the sores are completely healed.

I should like to mention that instead of Whitfield's ointment "M & B 693" powder was successfully used; but by reason of its scarcity, its use had to be abandoned.

Unguentum Hydrargyri Ammoniati Dilutum, perchloride of mercury (1/1,000), acriflavine (1/1,000 to 1/100) and many other bactericidal solutions were tried, but were not so satisfactory as the treatment described above. Dyes in common use in the Army, such as gentian violet, triple dye *et cetera*, are contraindicated, as they form protective cover under which the bacteria flourish. These multiplying bacteria attack the surrounding zone of healthy tissue, increasing the size of the lesion and forming an ulcer.

In the presence of an established ulcer, it was found necessary to insist on complete rest in bed. The ulcer should be cleansed and the necrotic tissue removed with carbolic acid or corrosive sublimate solution (1/1,000). Ointments of the sulphonamide group, especially sulphapyridine, were found useful, and were applied every second day for a week. "M & B 693" ointment (5% "M & B 693" in glycerin) cleansed and dried the lesions, but stimulated granulations very slightly. In the second week cod liver oil with zinc cream (equal parts) and acriflavine (1/1,000) was used. After a few days, epithelialization occurred at the edges and healthy granulations appeared. The ulcer filled with healthy granulations in about two weeks. In the final stage of healing, pure zinc cream, dry dressings or even "Cellophane" from cigarette packages was successfully applied.

There have been a few cases in which these methods of treatment failed, in that the ulcer showed no signs of improvement. In some of these cases, in which extensive ulceration was present, the patients were sent south for skin grafting, on the advice of the surgical staff. Other patients with unresponsive smaller ulcers were sent south, to try the possible beneficial effect of change of climate and living conditions.

Summary.

1. A group of skin lesions, prevalent under various names among the troops in the tropics, is described and defined as a separate entity.

2. The disease is shown to be bacteriologically initiated by a virulent strain of *Streptococcus haemolyticus* contaminated by a secondary staphylococcal infection.

3. The importance of (i) local protection by suitable clothing and (ii) general prophylaxis by a more careful attention to the vitamin and salt content of the diet, is discussed.

4. Suitable curative measures of general and local applicability are described.

Acknowledgements.

My thanks are due to Colonel F. H. Beare, Assistant Director of Medical Services, for permission to publish this paper, and to Major V. McGovern, of the 119th Australian General Hospital, for his helpful collaboration and pathological reports.

Reports of Cases.

RUPTURE OF THE ADDUCTOR LONGUS MUSCLE.

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This case of rupture of the *adductor longus* muscle may be of interest on account of its rarity. It is uncertain whether this condition has been reported previously, as the surgical literature is not available.

The patient, a soldier, thirty-five years of age, had apparently enjoyed normal health until July, 1941, when he fell down a pit thirty feet deep and injured his left thigh. He complained that shortly afterwards a swelling appeared on the medial side of his thigh just below the groin and that the swelling became much more pronounced when he contracted his muscles. The swelling simulated a herniation of a muscle through the *fascia lata*. Subsequently he had two operations at another hospital, the second operation being a *fascia lata* graft, so that apparently the condition had been treated as a muscle hernia. On admission to this hospital early in April, 1942, he had signs suggestive of a rupture of the left *adductor longus* muscle. There was an obvious swelling on the medial side of the thigh below the inguinal region which became larger on contraction of the adductor muscles (see Figures I and II).



FIGURE I.
Patient standing, with adductor muscles relaxed.



FIGURE II.
Patient standing, with adductor muscles contracted.



FIGURE III.
Subsequent to operation. Patient standing, with adductor muscles contracted.

At operation a week later the *adductor longus* muscle was exposed and isolated. The muscle had been almost torn through near its attachment to the femur and was contracted with much scar tissue. The origin from the pubic bone was detached and the whole muscle dissected out. A glove drain was inserted into the sheath and the *fascia lata* sutured. Some two weeks later, the wound had firmly healed and he appeared to have no disability (see Figure III).

Reviews.

TROPICAL MEDICINE.

At a time when Australian doctors will have to deal with cases of tropical disease in ever-increasing number, "Tropical Medicine", by such a well-known authority as Sir Leonard Rogers, and by such a splendid teacher as Sir John Megaw, should prove very welcome.¹ And after we have read it carefully through the feeling of pleasure in it increases—the subject matter is set out with exceptional care, and the book, though compact, is complete and up to date. No recent publications on tropical medicine can have been missed.

The grouping of diseases according to their causative agency is helpful, and there are some valuable tables of comparison and analysis which give a bird's-eye view of whole terrains. All those laboratory tests which are described in detail could be employed in the most primitive surroundings and with the minimum of apparatus. The illustrations are good, and there is a brief chapter on the use of the microscope for those who wish to renew their acquaintance with this instrument. As a result, if the practitioner has the material to hand, he can teach himself tropical medicine with the aid of this book. He will find here a means of rapid and accurate diagnosis of diseases, most of which can be completely cured by specific therapy.

In the sections on treatment only those methods of proved value are recommended, and of these full details are given. For example, the empirical use of the sulphonamides in dysentery is merely mentioned.

The chapters dealing with diseases associated with diet and with those caused by venomous animals are particularly interesting and informative. In the historical surveys the names of a number of Australian workers are found, notably Hamilton Fairley, Burnet, Kellaway and Derrick.

This book has not grown in bulk with each new edition, and the authors claim that this, the fourth edition, is even smaller than the previous ones. It is well printed and carefully edited, and is in every way a pleasure to handle.

Notes on Books, Current Journals and New Appliances.

HEALTH IN SOVIET RUSSIA.

At the present time, when the eyes of the world are focused on Soviet Russia and her matchless resistance to the Nazi invasion of her territories, considerable interest has sprung up in the social and economic system that has been evolved in the Soviet Union during the past twenty-five years. In his brochure "Health in the Soviet Union", R. S. Ellery deals with the subject from the medical point of view.² At the outset he makes the following statement: "I went there in a spirit of scepticism; and left not only converted to the Soviet outlook, but actually inspired by the changes the Soviet people had wrought in their social structure and in the firm belief that their dreams would bear fruit." Others have had the same experience. Dr. Ellery deals with the subject under several headings; but no detailed account of his story can be given in this place. It may, however, be pointed out that the most striking feature of Dr. Ellery's observations is the emphasis that is laid on preventive medicine. The Soviet citizen is under observation all his life—indeed, it may almost be said that he is under observation during his intrauterine life; yet, from Dr. Ellery's account at least, the Soviet citizen seems to be spared the stigma of being considered nothing but a necessary cog in a machine—a stigma that would appear to attach to citizens of Chile, if we may judge from a publication on the subject to which reference has recently been made in these pages. The Soviet system has many notable achievements to its credit, not the smallest of which is a decline in the incidence of venereal disease and the successful rehabilitation of prostitutes. Dr. Ellery's brief account of Soviet Russia's triumphs in the public health field is interesting and instructive. All profits from the sale of this book are to be given to the Russian Branch of the Australian Red Cross.

¹ "Tropical Medicine", by L. Rogers, K.C.S.I., C.I.E., LL.D., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S., and J. W. D. Megaw, K.C.I.E., B.A., M.B., Hon. D.Sc.; Fourth Edition; 1942. London: J. and A. Churchill Limited. Super royal 8vo, pp. 553, with illustrations. Price: 16s. net.

² "Health in the Soviet Union", by R. S. Ellery, M.D., F.R.A.C.P.; 1942. Melbourne: Rawson's Bookshop. Demy 8vo, pp. 48. Price: 6d. net.

The Medical Journal of Australia

SATURDAY, JANUARY 9, 1943.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE PERSONAL FACTOR IN ACCIDENTS.

THE practice of industrial hygiene may be defined as that branch of medicine which has to do with the preservation of the health of those engaged in industry. It is the practice of preventive medicine in industry. Clearly it must take cognizance of both the worker and his work—the worker, that he is fit in body and mind to undertake a certain kind of work, and the work, that it does not expose the worker to any avoidable hazard. The medical practitioner of industrial hygiene, if he has the right attitude, has before him always the welfare of the worker as an individual, taking care that the nature of the work does not, either directly or indirectly, take toll of the worker's health. That a healthy and happy working staff, by increasing output, may increase the prestige and profit of the employer is incidental to the arrangement and should not influence the hygienist, except perhaps during wartime when the output of the implements of war is the vital concern of everybody. The search for health as the main objective of the industrial hygienist is shown by the terms of reference for 1942 of the Industrial Health Research Board in Great Britain. Readers may perhaps be reminded that this board is part of the organization of the Medical Research Council of the Privy Council, that it was formerly called the Industrial Fatigue Research Board, and that it was first appointed in direct succession to the Committee on the Health of Munition Workers, set up during the war of 1914-1918. The terms of reference are as follows:

To advise and assist the Medical Research Council in promoting scientific investigations into problems of health among workers, including occupational and environmental factors in the causation of ill health and disease, and the relations of methods and conditions of work to the functions and efficiency of body and mind; and in making known such results of these researches as are capable of useful application to practical needs.

Nearly all industrial workers are exposed to the risk of accident. Their injuries may, and probably do, cause

pain and inconvenience, and when the trauma is severe recovery may be achieved at the expense of some permanent disability. Anything therefore that may be done to reduce the number of accidents is very much the concern of the industrial medical officer. That there is ample scope for a reduction in the number of accidents is shown by some figures quoted by H. M. Vernon¹ from the annual report for 1928 of the Chief Inspector of Factories. During that year in all industries put together the workers incurred 2,780 accidents per 100,000 persons. Workers employed in the manufacture of ordnance and the munitions of war headed the list with 11,393 per 100,000 persons. The importance of accidents in relation to the present need for production may be indicated by the fact that in 1933 the records obtained from a representative sample of over a million injured persons in England and Wales showed that 10.7% of the total time lost by men was due to accidents and injuries, as was 5.3% of the time lost by women.² In order that the results of research which can be usefully applied at present shall be more widely known, the Industrial Health Research Board is issuing a series of "Emergency Reports", and the third of these, the latest to be issued, deals with the personal factor in accidents.³ This is a subject which has been discussed in these pages on previous occasions. The last reference was in April, 1937, when special mention was made of an article by H. M. Vernon which appeared in the *International Labour Review* of December, 1936. On that occasion Vernon insisted that the majority of accidents incurred in most branches of industry were not connected with machinery at all, but depended on non-mechanical conditions in which the human factor played an important part. Human nature does not change a great deal and we can conclude that Vernon's contention is as true today as it was five and a half years ago. While it would be true to say that the present report is intended more for the non-medical than for the medical reader, medical practitioners would be foolish to pass it by on that account. The factors underlying the occurrence of accidents need to be understood, and here they are clearly set out. It is doubtful whether the condition known as accident proneness is recognized and understood as clearly as the present state of knowledge will allow. If it is not, then the necessary steps are not being taken to discover persons affected by it so that they may be placed while at work in surroundings of least danger. The discussion on accident proneness is the most valuable part of this report; it is discussed in the second half of the document, the first being devoted to a description of the general factors affecting the response of all individuals to factory conditions.

First among the general factors come the hours of work. Most people know that a person suffering from fatigue may appear to be careless because his mind and body are working less accurately. This carelessness is due, not to unwillingness to take care, but to an inability to do so because of excessive strain. It is stated in the report that in wartime longer working hours are necessary, but that the effects may be partially mitigated by rest pauses in the middle of a spell of work, by change of occupation, by

¹ H. M. Vernon: "The Health and Efficiency of Munition Workers", 1940.

² Quoted by Vernon, *loc. citato*.

³ "The Personal Factor in Accidents", Emergency Report Number 3 of the Medical Research Council Industrial Health Research Board; 1942. London: His Majesty's Stationery Office. 10" x 6", pp. 15. Price: 4d. net.

alternating sitting and standing when possible, and by adjusting working benches and machines to the worker, so that the whole of his energy may be directed to constructive work and not to overcoming unnecessary discomforts and hindrances. The subject of holidays is really inseparable from that of hours of work and in this discussion merely needs to be mentioned. Heating, ventilation and lighting, if not properly regulated, may be important contributory causes to accidents. A great deal, of course, depends on the type of work, but much might be written on glare in relation to fatigue and accidents. Inexperience may be a fruitful cause of accidents, especially at present when so many persons are changing their type of occupation. A worker may be quite unused to factory life; he must be so placed during his early days in the factory that he is not exposed to danger. The same is true of a worker who is transferred from one type of factory work to another that is completely different. Again, during his early days in a factory a worker must be taught his job by an expert and be allowed to work without regard to speed. In this way faulty and clumsy movements will not be acquired, and these, we are told in the report, are the basis of most accidents. Capacity for rapid movement is at its highest in the middle twenties; it begins to decline in the late thirties. When a man takes up a new occupation after the age of forty, he has to learn a new set of muscular habits and his age will make the acquisition of new mental habits more difficult. When speed is required of this type of worker he should be given an adequate training period. From these considerations attention will naturally turn to the attitude of the management and of the workers themselves towards accidents. Accidents must not be regarded as fortuitous or inevitable, or accepted as a matter of course. When safety committees are appointed they should not be regarded as having a humanitarian objective; if they are, accidents will not be prevented. On the other hand, if a positive attitude is adopted and a serious effort to prevent accidents is made, the number of accidents may be reduced. Vernon in his book quotes results collected at 78 tin-plate factories, employing 27,000 persons, which showed a fall of 28% in the number of accidents during four years in which a safety organization functioned. At a motor-car factory of 10,000 workers the rate fell 41% in three years, at a large biscuit factory 34% in three years, and at an iron factory of 2,200 men 37% in four years. Carelessness is "a failure to exercise adequate thought"; some workers think that regulations are all right for others, but they have the it-cannot-happen-to-me idea. These men forget that even with the best will in the world the human mind will wander occasionally from the work on hand to other subjects. It is better to cultivate a healthy attitude towards work known to be dangerous and not feared, than it is to have a timid frame of mind. "Care is not synonymous with fear."

Accident proneness is stated in this report to be a set of personal qualities, some of which have been measured, rendering certain individuals more liable than others to sustain accidents. So far, we read, the evidence from all sources goes to show that accident proneness is a relatively stable factor, manifesting itself in all periods of exposure and in different kinds of accident. There are always other factors in the determination of an accident rate, and these account for the absence of a closer relation between the

number of accidents sustained by an individual in two different periods. In spite of this, the relation is sufficiently close to prove that some set of factors is constantly present to make certain people more likely to have accidents than others. It has been shown that in a given factory department the number of persons with this liability ranges from 10% to 25% of the group. The Industrial Health Research Board has carried out investigations by "aesthetokinetic" tests, involving rapid and accurate hand and eye coordination, and has found that those who gave results below the average had a subsequent accident rate which was 48% higher than that of those whose results were above the average, and the accident rate of the worst 25% in the tests was 51% greater than that of the remaining 75%. The aestheticokinetic tests measure the capacity to respond accurately within a controlled time limit to various sensory stimuli. It has been found, however, that these tests are rated for prediction among skilled workers only. The failure to predict accident proneness among unskilled workers is a matter for further research. To predict accident proneness on the basis of previous accident records means that a worker must have sustained a certain number of accidents before he can be regarded as being prone to them. There is a disadvantage in this method of assessing accident proneness in that if the worker runs the risk of major accidents in his initial period of exposure, the decision that he is accident prone may be made too late to save him or his fellow workers from serious injury. When a skilled worker is discovered to be accident prone he should be transferred without any loss of prestige or pay to a department where risk of accident is minimal. It is important to recognize that there can be no antithesis between methods of accident prevention based on the lessening of accident liability by attention to the general factors already discussed and the methods based on the lowering of accident proneness. The two are complementary and neither can be substituted for the other. The knowledge already available should be used and research into the causes of accidents and accident proneness continued. To this end a systematic record of accidents should be kept for analysis by the body undertaking the research. This is work that could have been done in Australia by the Division of Industrial Hygiene of the Commonwealth Department of Health, had it not, to the great regret of many, been allowed to go out of existence.

Current Comment.

THE EVOLUTION OF DIETARY STANDARDS.

THE publication in 1753 of "A Treatise of the Scurvy" by J. Lind, of Edinburgh, marks the beginning of modern interest in dietary standards. A survey of medical and scientific literature or, for that matter, of magazines and illustrated papers shows how great that interest is today. *Nutrition Abstracts and Reviews*, a quarterly journal published under the direction of the Imperial Agricultural Bureaux Council, the Medical Research Council and the Reid Library, contains in each issue abstracts of about twelve hundred papers dealing with problems of nutrition. In a review of the literature on dietary standards, I. Leitch¹

¹ Nutrition Abstracts and Reviews, April, 1942.

observes that it has been known from ancient times that health and physical fitness are dependent on diet and that particular foods possess special virtues for the cure of disease. The first part of this statement is perhaps too sweeping; diet, though extremely important, is not the only factor on which health and physical fitness depend. Leitch goes on to remark that it is only in recent times that knowledge of the nature of food and of its functions in the animal body has been deliberately applied on any significant scale to the prevention of disease. Lind's theory of the nature of scurvy was confirmed by Cook's successful voyage, which must be one of the earliest experiments in nutrition. There was, of course, no knowledge of the reason why the eating of fruits and vegetables should prevent scurvy. During the nineteenth century clinical medicine recognized, although it could not explain, much of what we now call "deficiency disease". Buchanan, in 1863, included "loss of strength, colour and flesh, asthenia, rickets, tuberculosis, diarrhoea and dysentery, hemorrhagic tendency and scurvy, disposition to ulcerate and slough, corneal ulceration and ophthalmia" in a list of diseases due to "insufficient and unnutritious" diet; he also included the primary "starvation disease" typhus. Magendie had produced xerophthalmia in animals; his description was recognized by Livingstone as applicable to a condition occurring in African natives, but was apparently not recognized at that time by English doctors as applying to the corneal ulceration with which they were familiar in the urban industrial population.

The first dietary standard had been put forward to prevent scurvy in the Navy; the second was set up in 1862 to prevent "starvation diseases" at the request of the Privy Council, then the central medical authority. The Privy Council appointed Dr. E. Smith, a physician and scientist who had studied energy and protein metabolism, to make a dietary survey among unemployed cotton operatives during the cotton famine in 1862. Smith's terms of reference included the following questions:

1. What is the least cost per head per week for which food can be bought in such quantity and in such quality as will avert starvation-diseases from the unemployed population?
2. What, with special reference to health, would be the most useful expenditure of a weekly minimum allowance granted exclusively for the purchase of food?

Leitch describes this as "a survival standard with an economic background". It is interesting to contrast its terms with the terms of reference of a charter formulated by the United States of America National Nutrition Conference for Defense in 1941. These were "to explore and define our nutrition problems and to map out recommendations for an immediate program of action". The aims set out were "buoyant health", "the building up of our people to a level of health and vigour never before attained or dreamed of".

Many standards for diet and nutrition were put forward in the years that intervened between Smith's work in 1862 and the ambitious programme of the United States Nutrition Conference in 1941. Among these may be mentioned Lusk's standards, devised for the Inter-Allied Scientific Food Commission in 1918, standards formulated by a Committee of the British Medical Association in 1933, those of Stiebeling, of the United States of America Department of Agriculture, put forward in the same year, and the League of Nations' standards, drawn up in 1935. The economic depression which followed the war was responsible for the formulation of these last three standards. The British Medical Association aimed at constructing a diet which would maintain health and working capacity, while the standards of Stiebeling and of the League of Nations must be grouped together, since both attempted, as Leitch puts it, "to marry health and agriculture". This was a distinct forward step; by harmonizing the needs of the consumer with the work of the producer, it should be possible to benefit both, that is, to benefit the whole nation.

Although our knowledge of diet, and especially of the nature and effects of vitamins, has increased enormously since 1862, there is not such a very great difference between the various standards mentioned above. Earlier standards were somewhat defective in that they assumed that if

energy and protein supply were adequate, minerals and vitamins would be supplied in adequate amounts. The League of Nations' Technical Commission (1935-1936) reversed this earlier policy, considering that foods to supply essential minerals and vitamins should be chosen first; any further energy and protein required could be easily supplied.

Sugar, of course, providing carbohydrate only, is dead weight in the diet, requiring to be balanced by an excess of all the other specified constituents in other foods. The same is true of pure fats, except butter . . . if a high proportion of the energy be derived from highly processed cereals, sugar and refined fats, there will be danger of deficiency of protein and vitamin *B*, if the older procedure of looking after the calories only is followed.

These words might well be taken to heart by sugar-loving Australians, and by all who like to take their breakfast from gaily coloured packages. Other minor deficiencies are possible, as well as those mentioned.

Leitch's review contains much information of interest. One point seldom raised in literature on nutrition is of importance. When, and how, are all these diets to be eaten? To each too much too often is probably just as bad as to eat too little too seldom. The Greeks believed that one meal a day was the ideal régime; weaker subjects who, like Pooh, craved "a little something", might be allowed a luncheon as well as the daily meal. The Greeks laid down strict rules as to the amount of exercise necessary to digest a meal; a patient's symptoms were sometimes explained by the pithy comment: "But he was always eating and drinking." Future dietary commissions might be well advised to study the manner as well as the matter of our meals.

EXTRAPLEURAL PNEUMOTHORAX.

THE induction of extrapleural pneumothorax was devised for the treatment of pulmonary tuberculosis when ordinary intrapleural pneumothorax could not be achieved. It has not been largely practised in this country. G. Samuel has recently discussed some of the unhappy results of this form of treatment.¹ He points out that the operation of stripping the parietal pleura from the thoracic wall is a long one and that during it the tissues are liable to be damaged so that their resistance to infection is lowered. As a result infection frequently occurs. It is all the more likely because the patient is in a poor general condition in the first place. When infection occurs an abscess forms in the pneumothoracic space between the parietal pleura and the thoracic wall. Sinuses are apt to appear, and the septic process is prolonged. In an ordinary abscess the walls, which are elastic, recoil and obliterate the cavity once drainage has been established. But the extrapleural abscess is not provided with such elastic walls. One would imagine that the lung would reexpand and so obliterate the cavity; but, according to Samuel, it does not. Presumably the pleura becomes thickened and stiff and inelastic. At the Sir William Wanless Sanatorium, where Samuel works, extrapleural pneumothorax has been induced in sixteen cases. Nine of these inductions were satisfactory. One patient died of shock after the operation, and two were discharged as incurable. In each of the remaining four cases abscess developed in the extrapleural pocket. Death occurred in two of these; thoracoplasty was performed with satisfactory results in the other two. Samuel regards thoracoplasty as the only means of bringing the walls of the abscess cavity together. Samuel's figures are not encouraging. If we exclude the two patients who were hopelessly ill and were apparently badly chosen for the operation, we find that there were fourteen, in nine of whom the operation was successful; three others died as the result of the operation, and the remaining two had to be subjected to further mutilation to give them a chance of recovery from the results of the operation. It would seem wiser and safer to perform thoracoplasty in the first place.

¹ *The Indian Medical Gazette*, October, 1942.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Icterus following Yellow Fever Vaccination.

JOHN P. FOX, CAIO MAUSO, H. A. PENNA AND MADUERA PARA (*American Journal of Hygiene*, July, 1942) have made observations on the occurrence of icterus in Brazil following vaccination against yellow fever. The phenomenon had first been noticed two years earlier, when immune serum of human or animal origin was combined with the modified virus. When normal human serum was substituted, the incidence became much higher and was related to particular batches of vaccine, while a certain number of icteric patients stated that they had never been vaccinated. Jaundice appeared sixteen to twenty weeks after inoculation and was more frequent in older patients and amongst males, though often multiple cases were found in one family. In half the patients the illness ran its course to recovery in under forty-nine days, though deaths did occur as early as eighteen days and as late as eighty days from the onset. The clinical picture resembled "catarrhal jaundice", and autopsy in fatal cases revealed the pathological features of central hepatic necrosis, biliary hyperplasia, round cell infiltration and formation of new fibrous tissues, in accordance with text-book pictures of acute and subacute yellow atrophy. The authors discuss other forms of post-inoculation jaundice, and the possible nature of the icterogenic agent in the vaccine, with the suggestion that the human serum may be incriminated, or even the chick embryo used for cultivating the virus. This latter suggestion was eliminated by the search for complement-fixing antibodies to chick embryo antigen in vaccinated icteric patients. All culture studies of the vaccine itself gave negative results, and all attempts to isolate a virus from icteric patients also failed. The authors believe that there was probably an external variable factor in operation which produced differences in the result when the icterogenic agent was inoculated in the particular batches of yellow fever vaccines. The agent may be a virus gaining entrance by way of human serum into tissue cultures and remaining as a strain contaminant. Since this theory was originated human serum has been eliminated from the vaccine, and 164,000 people have been inoculated with no reappearance of icterus.

Complement Fixation in Malaria.

ANNA DEAN DULANEY, WARREN K. STRUTMAN-THOMAS AND OTIS S. WARR (*The Journal of Infectious Diseases*, May-June, 1942) have investigated the diagnostic value of complement fixation in malaria. They had a group of patients undergoing malaria therapy, and a small group of patients with naturally acquired malaria. They prepared the plasmodium antigen from the blood of monkeys heavily infected with *Plasmodium knowlesi*, by washing and laking, and centrifuging the parasite mass. This could be dried and stored,

and for prepared antigen one-tenth of a gramme was extracted with physiological saline solution frozen and thawed several times, centrifuged, and the supernatant used after standardization against malarial and normal serum. The complement-fixation tests were done at 37° C. It was found that the result of the test was positive, 81.6% of subjects harbouring parasites in the blood. Very early treatment of the malaria inhibited a positive complement-fixation reaction, while varying titres of patients' serum seemed to run parallel to the number of parasites in the blood. A "normal" series gave a small number of "non-specific" reactions, while frequent positive reactions were found amongst patients suffering from leprosy and amebic dysentery. In a group of presumably malarious patients with normal blood smears, 9% gave positive reactions to the tests. The authors think that the method may have its place in a large laboratory as a supplement to the diagnosis of malaria.

Purified Penicillin.

H. W. FLOREY AND M. A. JENNINGS (*The British Journal of Experimental Pathology*, June, 1942) have reinvestigated some biological properties of highly purified penicillin prepared by Abrahams and Chain. They found antibacterial activity of a high order against *Staphylococcus aureus* and several strains of sulphonamide-resistant β -haemolytic streptococci, complete inhibition being obtained in a dilution of 1 in 8 million. Toxicity tests carried out by intravenous injection of mice showed that the refined substance had no effect on mice. Leucocytic activity persisted up to one hour in a 1% solution in saline solution, and longer in weaker dilutions. An attempt to use the calcium salt proved it to be very toxic to mice. The standard for testing the penicillin is that amount which, dissolved in 50 millilitres of meat broth, inhibits completely the growth of the test strain of *Staphylococcus aureus*. The authors conclude that earlier samples of the substance did not contain more than 10% of active substance.

Valence of Antibodies.

F. HAUROWITZ AND P. SCHWERIN (*The British Journal of Experimental Pathology*, June, 1942) have continued their studies on the valence of antibodies and the structure of the antigen-antibody precipitate. They immunized rabbits with an antigen containing two identifiable fractions, an arsenic group and a species specific "sheep" group. Fractional purification of antiserum and mixture with antigen led them to believe that the antibody molecule had one free linkage, the antigen being a multivalent aggregate of particles, so that the precipitate formed in the mixture consisted of an antigen molecule with which a variable number of antibody molecules had become bound and therefore changed in form.

Anthrax Spores and Heat Resistance.

E. R. JONES (*The Journal of Pathology and Bacteriology*, July, 1942) describes the isolation of *Bacillus anthracis* from industrial material and makes special reference to the resistance of the spores to heat. He shows quite clearly that of three stains

tested, spore suspensions showed a diminution of the viable count after exposure to a temperature of 80° C. for as short a period of time as two minutes. He quotes the investigation of 14 samples of bone meal in which heating had been carried out at 80° C. and all results were negative. He evolved a technique in which the material was heated to 65° C. for five minutes only, and 11 isolations of *Bacillus anthracis* were made and verified by animal inoculation. The method of demonstrating capsules of the true anthrax bacillus by incubation overnight of a broth suspension to which two or three drops of fresh human blood have been added, and staining films with polychrome methylene blue, is also described as being useful, but always to be used in conjunction with the animal test.

Plasmodium lophurae in Ducks.

REGINALD HEWITT (*American Journal of Hygiene*, July, 1942) made studies on the host-parasite relationships of untreated infections with *Plasmodium lophurae* in ducks. The degree of parasitism produced by intravenous inoculation is very high, and the bird sufficiently large to constitute a convenient host for experimental study. Large doses of parasites were used, and the numbers increased to a peak in four to eight days, the figures obtained in young birds being higher than in older ones, and fatal terminations more frequent. Careful studies were made of the blood picture of the birds, though no reliable method of counting bird leucocytes is yet available. The higher the parasitemia, the greater the anaemia, and if the bird survived there was rapid regeneration. Differential white cell counts showed variation in some of the specialized granular cells, and increase in lymphocytes and a variable rise in monocytes. Temperature studies were made in a small group of birds and showed a sharp rise on the third or fourth day, often of 4° F. or more, and a sharp drop whether the parasite count rose before a fatal termination, or fell and was followed by recovery. The temperatures did not parallel the maximum degree of segmentation. Parasite studies showed that the amoeboid form was consistently the most abundant and that the asexual cycle took approximately thirty-six hours to complete. All forms might be present at the one time, particularly when the parasite count was brief. The author has made preliminary studies on known plasmocidal drugs in dosage governed by body weight, and finds marked morphological changes and reduction in numbers of the parasites. He believes that within certain limits infections in young ducks can be standardized, and that this particular host-parasite relationship will afford excellent controls for the histological assay of untried therapeutic agents, as well as other aspects of experimental infection by plasmodia.

HYGIENE.

Epidemiological Aspects of an Encephalitis Epidemic.

W. M. HAMMON AND B. F. HOWITT (*American Journal of Hygiene*, March, 1942) state that an encephalitis

epidemic among both men and horses took place in the Yakima Valley from July to September, 1939 and 1940. In 1940 twenty cases were found in horses and 86 in man, 58 of which were confirmed by tests. The rural and small towns were more affected than the city, orchard areas most of all, especially those growing apples and alfalfa. The rates increased with age and were highest at about ages of 45 to 50. Of the patients 81% were males. The incubation period is seven to eleven days. The mortality rate was 22%. The seasonal and weather conditions did not seem to favour any insect vector, but the viruses have since been isolated from the mosquito *Culex tarsalis*. Birds, domestic and wild, and horses may be reservoirs of the virus.

The Naso-Pharyngeal Swab in the Diagnosis of Pertussis.

T. M. SARTO, J. J. MILLER, JUNIOR, AND C. W. LEACH (*American Journal of Public Health*, May, 1942) discuss the naso-pharyngeal swab in the diagnosis of pertussis. They make a comparison of the cough plate method with the Bradford-Slavin naso-pharyngeal swab when use is made of a small piece of cotton tightly wrapped about the end of a thin flexible copper wire. This is passed through a nostril into the nasopharynx, the child's head being firmly held. If one side is obstructed the other is tried. Cough is often induced and the cough plate can be used at the same time. The Bordet-Gengou medium is inoculated. Among 154 cases 64% of positive reactions were obtained by swab at some stage of the infection and 49% by plate. The organism was at times viable up to three days in the refrigerator, but prompt inoculation is important. While the swab gives a higher percentage of positive cultures, it is easier to use and gives a result more quickly, the use of both methods is better than use of the swab alone.

Tuberculosis Case Finding in Institutions.

H. E. HILLEBOE, R. B. HAAS, C. E. PALMER AND W. P. GARDNER (*American Journal of Public Health*, May, 1942), writing on tuberculosis case finding in institutions, report that the method of a miniature X-ray examination was tested in a State hospital for the mentally ill. Of 1,264 patients few could not be tested, yet in 1,200 tests, over 150 previously unrecognized cases of tuberculosis were added to 66 already known. Four were far advanced and 57 moderately advanced. In comparison with the full plate, 21 out of 246 were "underread" by the miniature film, but all except three were minimal and clinically inactive. "Overreading" occurred in 31 out of 962 cases, so that only 31 plates were taken unnecessarily. The method deserves widespread adoption in institutions both for segregation of the active tuberculous infections and for reasons of economy.

The House Fly as a Vector of Food Poisoning Organisms.

M. OSTROLENK AND H. WELCH (*American Journal of Public Health*, May, 1942) state that house flies infected with *Salmonella enteritidis* deposited large numbers of organisms on sterile pecan meats within fifteen

minutes of exposure. Flies trapped around crab-meat factories gave counts of 750 million bacteria and up to a million *Escherichia coli* per fly. Ten marked flies fed on milk infected with *Salmonella* were placed in a cage with 100 unmarked uninfected flies. Maceration of unmarked flies at the end of four days showed that the intestinal contents contained the test organism, as did the food, water and surfaces in the fly cage also. Flies fed on infective food and transferred at intervals to fresh sterile cages were found to retain the *Salmonella* infection in the intestines for life (about four weeks). Recovery of the organisms from the fly food and water and cage surfaces occurred throughout. Freshly hatched flies fed on infective material were transferred to a cage with six mice in a sterilized cage and fed on sterile food. The pellets of the mice were tested and four had become infected and two died. Similarly infected mice were shown to infect fresh uninfected flies. The transmission is made with ease and rapidity and through several fly populations and over the surfaces with which they were in contact. The infection of breeding material may give rise to infected maggots, pupae and adults.

A Study of Human Equine Encephalomyelitis and St. Louis Encephalitis.

BEATRICE F. HOWITT (*American Journal of Public Health*, May, 1942) reports that clinical studies and serum neutralization tests carried out in California in 1939-1941 show that the virus of western equine encephalomyelitis has become endemic for man. All stages, mild and serious, are seen. Residual effects are seen chiefly in the young months later in the form of personality defects. Every precaution must be taken in the endemic regions against mosquito bites as *Culex tarsalis* is a vector. The St. Louis virus, though not now dominant, is often associated. Recent introduction by migrants has been disproved. The serum tests give reactions when applied to horses, fowls, wild animals and infants under one year of age. Of nearly 500 specimens of serum from cases of neurotropic virus disease, 42% neutralized western equine encephalomyelitis, 11.5% showed virus only, and 13% both viruses. In children boys and girls are equally affected, but more men are attacked than women. The equine strain is found mostly in children under ten years of age, the St. Louis strain at thirteen to thirty. The peak of the epidemic is in July or August.

Epidemiological Observations in the Halifax Epidemic.

S. M. WHEELER AND A. R. MORTON (*American Journal of Public Health*, September, 1942) report that in the winter of 1940-1941 outbreaks of diphtheria (*gravis*), scarlet fever and epidemic meningitis took place together in Halifax. Influenza (mild) and measles were also common. To Halifax with its 70,000 were added many soldiers and sailors. Among the civilians 640 cases of diphtheria with 24 deaths were noted, also 114 of meningitis with 16 deaths and 605 cases of scarlet fever without a death. While immunization induced a lower rate of diphtheria at ten to fourteen years of age, the attack rate rose to its greatest

height for the ages fifteen to twenty-four and was still high up to forty. Scarlet fever showed no decrease in the ten to fourteen year group, but also gave high adult figures. The diphtheria epidemic was exclusively *gravis* in type; it was probably imported and had more septic and toxic complications. The spread among civilians was chiefly on the waterfront where contact with sailors was greatest. The exchange of infection to their sweethearts and wives was also striking, the main peak being between ages fifteen to thirty years. Poor housing and overcrowding were also factors. Carriers among school children dropped from 30% in February to 2% in June—at this date it had become an adult epidemic. Only 15 of the 605 cases occurred among previously immunized children—an attack rate of 296 per 100,000 as against 2,027 in the susceptible. Over 8,000 people were immunized; 45% of adults were already immune. Adults were subjected to the Schick test on one arm and the Maloney test on the other. The results of the two tests were read five days later when the first toxoid dose was given. Three doses of toxoid were given at three weeks' interval and another Schick test was made six months later. The authors urge the need for decent housing in defence areas and the use among civilians and troops of all known preventive methods. Every soldier and sailor should be subjected to the Schick test and immunized if need be.

Half a Century of Diphtheria Prevalence in Quebec.

A. R. FOLEY (*Canadian Public Health Journal*, May, 1942) discusses half a century of diphtheria prevalence in Quebec. The mortality in diphtheria was at its peak in 1895 in the province of Quebec. The death rate per 100,000 then reached 150 with 2,242 deaths in a population of one and a half millions. In 1940 the death rate had dropped to 3.6 per 100,000, 118 dying in a population of 3,300,000. The campaign for immunization in 1930-1934 brought it down in 1934 from 10.9 to 4.1, but a rise occurred in 1937-1938 owing to incomplete immunization in Quebec. In the last ten years, 1931-1940, a quarter of a million children were actively immunized. The author states that they may have had a few scares, but no serious incidents. It is probable that a reasonable immunity will protect children for about five years. A reinforcing dose one year after immunization or when the children begin school is worth while.

An Outbreak of Paratyphoid Fever.

R. O. DAVISON (*Canadian Public Health Journal*, May, 1942) states that in July, 1941, a town in Saskatchewan (North Battleford) with 5,500 inhabitants had 65 cases of typhoid and paratyphoid with three deaths. In 35 cases with one death the causal organism was *Bacillus paratyphosus*. All patients were adults. Milk and water were excluded as infective agents. No milk handlers were carriers. Evidence pointed to vegetables which came from a Chinese "truck farm" and which were irrigated and washed with sewage effluent. The organisms probably came from two Indians ill in hospital with typhoid fever whose stools were not disinfected but merely discharged into the sewer.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held on August 5, 1942.

Lymphogranuloma Inguinale.

The meeting took the form of a symposium on *lymphogranuloma inguinale*.

DR. H. F. BETTINGER read a paper entitled "Lymphogranuloma Inguinale: Historical Review and Pathological Aspects" (see page 23).

CAPTAIN F. M. McDONALD (United States Army Medical Corps) read a paper entitled "Clinical Aspects of Lymphogranuloma Inguinale" (see page 25).

LIEUTENANT H. H. JOHNSON (United States Army Medical Corps) read a paper entitled "Laboratory Findings in Lymphogranuloma Inguinale" (see page 28).

DR. JOHN O'SULLIVAN said that for many years he had been interested in the reticulo-endothelioses, and he did not think that if he classed *lymphogranuloma inguinale* in that group of diseases the pathologists would quarrel with him. He thought that the slides shown by Dr. Bettinger resembled in some respects the appearances in the early stages of Hodgkin's disease, which many considered was at first localized in the pharynx and spread from above downwards, whereas *lymphogranuloma inguinale* was at first localized in the genital region and spread from below upwards. Lesions of the reticulo-endotheliosis type were sensitive to irradiation, and Dr. O'Sullivan wondered what were the results of radiation therapy of the disease under discussion. He considered that by analogy a virus origin might be found for Hodgkin's disease.

DR. E. M. ETTELSON asked whether *lymphogranuloma inguinale* was a notifiable disease in the United States of America, and if so, what was its incidence.

PROFESSOR R. MARSHALL ALLAN said he would have liked the discussion to be rounded off by Dr. Bills, of the Cleveland School, since he was interested to know what happened if pregnancy occurred in those suffering from *lymphogranuloma inguinale*; the disease frequently led to sterility, but did not preclude the occurrence of pregnancy. As an obstetrician, Professor Allan was interested in what might happen at term, because on account of vaginal ulceration natural delivery might be impossible. A series of 18 cases reported from Chicago recorded 16 instrumental deliveries and two Cæsarean sections, and experience showed that the infants were not affected and developed normally. He thought that pressure of a fetal head on indurated masses might lead to necrosis, sloughing, infection and death, and he was interested to learn from the Chicago series that such a high proportion of patients could be delivered naturally.

DR. SALOME WHITE asked if any of the opening speakers had had experience of the use of "Antheomiline", a German preparation, which she had used in northern Queensland with temporarily good results. One patient had aborted at four months, but the lesions had healed and remained healed for some time.

DR. BETTINGER, in reply to Dr. O'Sullivan, said he was not certain that he could agree to the suggestion that *lymphogranuloma inguinale* was a reticulo-endotheliosis; that term was generally reserved for conditions which were not so strictly localized, and Dr. Bettinger did not think, despite some resemblance, that Hodgkin's disease was likely to be an associated condition. In Hodgkin's disease the process was usually spread over the whole or greater part of a lymph gland, and even early in the condition the pathological changes were not so circumscribed as in *lymphogranuloma inguinale*.

Captain McDonald said that in Cleveland the experience had been that the best methods of treatment were rest in bed, the application of heat, aspiration, the use of potassium permanganate compresses when purulent exudates were present, and fever therapy. He had had no experience of X-ray therapy and it was thought by many that Frei antigen therapy was superior. He could give no specific figures of the incidence of the disease, but in four of the United States of America it was notifiable.

Captain Morton said that he could not give exact figures of incidence, but although numbers of cases did occur in the United States, *lymphogranuloma inguinale* accounted for less than 1% of the total of venereal infections.

Lieutenant Johnson said that Dr. White's description of the patient she had treated resembled *granuloma inguinale* more than *lymphogranuloma inguinale*; and he was of the opinion that the former disease was not uncommon in northern Australia. The use of antimony salts in the treatment of *lymphogranuloma inguinale* had been repeatedly suggested, but clinically and experimentally they were of little value. His own extensive experience of the use of antimony had been discouraging. In San Francisco, at a hospital caring for white merchant seamen, there were always a dozen or more patients from China, the Netherlands East Indies and other areas in the Pacific, most of which were in closer proximity to Australia than was San Francisco.

LIEUTENANT-COLONEL McCALLY said that he did not think the size of the masses would cause dystocia, and he was of the opinion that the involved gut would not easily rupture.

PROFESSOR P. MACCALLUM moved a vote of thanks to the speakers. He said that the meeting had been an important one, and the members of the United States Army Medical Corps had to be thanked for telling of a disease of which Australians had little experience. He was sure that before the meeting most of the audience would have said that *lymphogranuloma inguinale* did not occur in Australia; but Dr. Bettinger, who had seen the disease in China, had shown that it was unlikely that it had not been in this country for some time, and it was fortunate that he was working at the Women's Hospital, where he had found two cases. *Lymphogranuloma inguinale* was a menace from the standpoint of public health, and Professor MacCallum had been interested to hear that it might be present in Queensland. *Granuloma inguinale*, with which it was frequently confused on account of the similarity in nomenclature, was clinically quite a common disease among natives in northern Australia. Professor MacCallum expressed the gratitude of the audience to those who had told the story of a disease which might become a major problem.

DR. J. A. CAHILL, in seconding the vote of thanks, said that like others he had come to the meeting knowing practically nothing of the subject which had been discussed, and he had enjoyed the papers and learned a great deal from the speakers.

PROTECTION OF PRACTICES SCHEMES.

THE following letter dealing with the protection of the practices of medical practitioners on active service and income is published at the request of the General Secretary of the Federal Council of the British Medical Association in Australia.

[COPY.]

Department of Taxation, N.S.W.,
Savings Bank Building,
14 Castlereagh Street,
Sydney,
29th December, 1942.

The General Secretary,

The Federal Council of the British Medical Association in Australia,
135 Macquarie Street,
Sydney.

Dear Sir:

Medical Practitioners on Active Service: Schemes for the Protection of Practices and Income.

I shall be glad if you will be good enough to circulate through the medium of your journal the necessity for the Trustees under the above schemes to lodge income tax returns for the Trust, showing the income and expenses and a list of the names of and amounts paid or credited to members on active service each year.

Yours faithfully,

J. W. HUGHES,
Federal Deputy Commissioner
of Taxation.

Public Health.

PARLIAMENTARY JOINT COMMITTEE ON SOCIAL SECURITY.

The Parliamentary Joint Committee on Social Security was appointed "to inquire into and from time to time report upon ways and means of improving social and living conditions of the people of Australia and of rectifying anomalies in existing legislation". The personnel of the committee is as follows: Mr. H. C. Barnard (Chairman), Senator Cooper (Deputy Chairman), Senator Arnold, Mr. Maurice Blackburn, Colonel R. S. Ryan and the Honourable J. A. Perkins.

In the issues of December 19 and 26, 1942, and January 2, 1943, summaries of some of the evidence given before the committee in Melbourne have been published. In this issue we publish accounts of the evidence given by Dr. W. G. D. Upjohn, Dr. A. E. Brown, Dr. H. Boyd Graham and Dr. Jean Macnamara.

Dr. W. G. D. UPJOHN, being sworn, read the following statement to the committee.

Disposition of Medical Personnel.—Under conditions of private practice, medical practitioners, generally speaking, prefer to conduct their practices in localities of their own choice. Some have a liking for country life and the opportunities for entering fully into the corporate life of the community in which they practise and for using their influence as members of a respected profession in contributing to civil progress in their town or district. These spend all their lives as country practitioners and in many instances achieve such a high degree of professional ability as to entitle them to rank among the most eminent in the profession.

Many, however, after practising for some years in a country town, find that conditions are such as not to allow of their abilities being given a wide enough scope, or that their earning capacity is limited, or that the circumstances of country life prove disadvantageous for their wives or for the education of their children, and so they tend to leave the smaller country towns to practise in the larger country centres or in the city.

The facilities for a practitioner developing his talents as a specialist or for carrying out certain technical parts of his work with greater advantage to his patients and with more satisfaction to himself, are generally better where many practitioners can practise together in the larger centres of population. One finds therefore that most of the medical practitioners are practising in the cities and larger country towns.

The establishment of better facilities for practice, such as well-equipped hospitals with specialist services in X-ray and bacteriology departments, has increased the tendency to group practitioners in the towns where these hospitals are established, and smaller towns where formerly a general practitioner resided no longer maintain a doctor. This tendency, which had been noticeable for many years before the war, has been accelerated and accentuated in recent years, especially since the outbreak of war.

It would be a misunderstanding to think that the choice of a large centre in which to practise is dictated by a desire to earn higher remuneration; it is rather that a professional man sees that he can more adequately examine and treat his patients according to higher modern standards where the best facilities are provided. This is undoubtedly to the advantage of those patients who can come to him for such examination and treatment, but it is undoubtedly inconvenient and expensive to the inhabitants of country districts who live many miles away from these modern facilities.

Where there is a good transport service over good roads the inconvenience is lessened, but when a doctor has to be called out many miles to some emergency the disadvantages suffered by the country patient, both from the point of view of safety and expense, are obvious. The curtailment of transport services since the war and the restrictions in the private use of motor spirit have added very much to these disadvantages.

In the city there is a greater concentration of medical practitioners in the more pleasant residential suburbs than in the industrial areas. Domestic surroundings are more pleasant and medical practice is more conveniently managed, though on the whole less lucrative, in the residential areas than in the industrial areas.

Operations of the Civil Emergency Medical Service.—The Civil Emergency Medical Practitioner Service has been

organized to meet emergency demands which have arisen and may arise in consequence of enemy action. Thanks to our armed services and those of our allies, there has not arisen the necessity to put the organization to much use in this State.

It has been of service in stabilizing medical practice and preventing uncontrolled movement of medical practitioners without regard to the civil needs of the districts in which they have practised.

It has been used to supply salaried full-time medical officers to three country towns which had been without doctors for a considerable period.

It is expected that similar action will have to be taken with other towns later on. If sufficient practitioners were available there are several country centres which would have salaried full-time medical officers allocated to them.

The system has been in operation too short a time to judge of its success or defects, but so far it is proving satisfactory, but will doubtless need some modification in details.

There is one thing so far which seems to have shown out, and that is the unsuitability of a perfectly uniform plan and system to the whole of Australia. Certain local adjustments and alterations are needed to make smooth running.

The Medical Needs of the Civil Community as Affected by War Conditions.—As already stated, the war has accelerated and accentuated certain changes in medical practice which were taking place before the war, just as it has done in other social changes in the State. This has been noticed particularly in country towns and districts, but there have been some difficulties also in city and suburban medical service.

The younger medical men have been taken in very large proportion for the Services, leaving only those younger men who are medically unfit or who are engaged in medical practices of such a nature that their removal from civil practice would lead to progressively inadequate medical service to the civil community.

Medical practitioners of a higher average age and decreased physical capacity for work are now engaged in giving essential civil medical service. Nowhere has medical service broken down, but the strain on practitioners is increasing and it is becoming more difficult to fill the gaps caused by sickness and death in the profession.

Annually in Victoria about twenty members of the profession die and about an equal number retire. Normally one looks to new graduates to supply their places. These are not now available as relief because most of them are physically fit and join the Navy, Army and Air Force. Older practitioners are continuing in active practice who in normal times would now be retiring.

On the whole patients have been considerate and have recognized the propriety of not making more demands on the services of doctors than appear to them necessary, and owing to the diminished numbers of practitioners there has been forced on them the necessity of giving attention to really important medical matters to the exclusion, or partial exclusion, of the less important troubles which may inconvenience their patients. Of necessity there must at times be delays that would not occur in peace time, but I think it is correct to say that serious illness or accident still gets its treatment without undue delay.

A seriously ill patient can be more efficiently treated in a properly equipped and adequately staffed hospital or nursing home. Much inconvenience and some harm result from the present insufficient hospital accommodation for private and intermediate patients. Some private hospitals have closed and others have had to restrict their activities from difficulties in obtaining sufficient nursing and domestic staff. Many of the smaller nursing homes have closed because of inability to get domestic staff.

A doctor's time is uneconomically used if he has to waste it in travelling to visit and treat in their own homes a number of patients who would be better attended in a single hospital. A great deal of the doctor's time is now wasted in the prolonged efforts to find a vacant bed for an urgent case. I am informed that there is specially a difficulty in getting nursing and hospital accommodation for women in childbirth.

Desirability of Introducing any Phase of New Medical or Health Services during the War.—In my opinion it would be unwise to introduce any extensive measure of new medical service while so many selected members of the profession are away in the Navy, Army and Air Force and unable to exert their effect in contributing to the efficiency of a new plan of medical service.

It would be inviting failure of any new plan and would bring into popular disrepute all similar plans, if attempts

were made with inadequate equipment and insufficient or not fully efficient medical personnel, to put such a plan bit by bit into practice.

No matter how good a plan may be in theory, it is essential for its success that those who are carrying out the plan and daily working within its scope must be satisfied that it is good and workable and so worth while in its aims and constitution as to make them desire to continue working in the service.

A large number of medical practitioners are away on active service and have had no opportunity of examining these plans, of expressing their approval or opposition, or of offering useful suggestions for improvements and additions to the plans.

Such parts of any plan which might from time to time appear necessary to be put into practice could be temporarily arranged for within the scope of the Emergency Civil Medical Practitioner Service.

Many problems dealt with in medical practice are but parts of very much larger social and economic problems. Some of these medical problems would diminish to very small importance and could be prevented from arising by appropriate alterations in the social and economic life of the community.

Much that doctors have to treat at the present time should and could be prevented and many of their best efforts are frustrated by causes inherent in the structure of society as we know it at present, and over which medical practitioners have no control.

It appears to me that alterations in the plans of medical service to the civil community should follow or be associated with alterations in the social and economic organization of our State.

To initiate the medical changes above, either in part or in whole, without taking notice of other far greater and more important changes which logically should come first, is likely to be attended by little chance of success, and it will certainly lead to disappointment in those receiving treatment, to unfruitful expenditure of time and energy by the medical profession, and to a very great waste of public money.

Dr. Upjohn pointed out that salaries in the Emergency Civil Medical Practitioner Service were equivalent to those paid to medical officers of the armed forces, as it was considered fair that those called up for civil duty should make sacrifices equivalent to those called up for duty in the Services, but Emergency Medical Service salaries should not be the basis for a peace-time salaried medical service.

Replying to Mr. Perkins, the witness said that in Victoria the shortage of doctors was acutely felt in all districts.

He thought that the medical profession was as attractive now as previously to students; in fact the number of students was increasing, but whether fewer students would be drawn to medicine if the profession was nationalized depended on the attractiveness of a nationalized service. If that service was properly administered, devoid of favouritism and provided opportunities for good work, medicine had so much to attract those interested in it that a good type of student would still come forward.

He thought that both large and small hospitals were necessary, but Melbourne lacked sufficient of the latter and many of them were going out of business.

Ambulance services and central hospitals could not adequately meet the needs of the community.

Replying to Senator Arnold, Dr. Upjohn explained that an Emergency Civil Medical Practitioner Service had been established with Dr. Cumpston as its Director-General. There was an executive officer in each State who carried out the decisions of the Medical Coordination Committee of that State, and all members of the civil medical profession, under sixty years of age, were enrolled in the Service, unless exempted, while those over sixty years could volunteer. Members of the Services could be allotted for duty under National Security Regulations, and if so allotted received rates of pay equivalent to those of officers of the armed forces.

He did not think for one minute that the Emergency Medical Service could control a general salaried medical service, which should be controlled by a statutory body comparable to the Council for Scientific and Industrial Research. Already he could see a great deal of potential interference by outside influences in the control of the Emergency Medical Service.

In such a statutory body it would, he thought, be reasonable to have lay representation to express points of view which might otherwise be overlooked, but any control of technical or medical work by laymen would result in dis-harmony and inefficiency.

Dr. Upjohn said that he felt that devoting attention to the establishment of medical services to deal with illness was dealing with the tail-end of the problem. Many disabilities resulted from early influences, for example, a father with tuberculosis frequently had to continue earning a living and residing with his family, to which he was a source of infection. A system of medical practice suited to the present individualistic system was working, but what was to be the constitution of society in the future? Economic and social factors were more important than medical care.

Under the present system no one went without medical care, and if a patient was not satisfied with his doctor, he could go elsewhere. Medicine was a personal thing, and any plan which lost the close association between the general practitioner and the family as a unit would lose a great deal.

Specialist services were readily available in the metropolitan area and in many of the larger country towns, but not in remote areas. He considered that there would be some advantages in examining and recording the state of health of the whole population, but it would be an expensive undertaking and its real value was questionable. People were probably too complacent regarding some matters, for example, the nutrition of children, but it would not be of any use to find troubles unless action was taken to remedy them.

Relying to Senator Cooper, Dr. Upjohn said that economic and social reforms should precede changes in medical services.

He thought that the Beveridge plan would fit in with the constitution of society in England, but it appeared to deal more with repair than prevention.

He considered that men on service should have the opportunity of expressing their views on any proposals affecting the future of medical practice. They were the people who would have to work any new system, and unless they worked it with a will it would fail. Many of those on service had never practised, but many had and would be fit to work for several years after their return; they would have strong views on the matter.

There need be no fears that medical officers at the end of the war would lack work, as he thought all would fit into the existing system.

While men on service could be informed in writing of any proposed changes, and it was desirable that they should be, they could not furnish final opinions.

A general plan would not suit the whole of Australia. Conditions varied, and already there were great diversities of practice in the different States, but if decentralized bodies, in such a scheme as that of the National Health and Medical Research Council, had sufficient latitude, they could provide for those diversities. Variations in the cost of living made it difficult to say whether the salaries proposed under the National Health and Medical Research Council plan were reasonable. He did not know what the average earnings of medical men were, but in Victoria the average might be £1,500 per annum. The best days of medical practice, from the financial aspect, were prior to the 1914-1918 war, and since then there had not been much opportunity for medical men to save.

Pensions would attract some men to a salaried service, but not all.

As a purely personal view he thought that administrative salaries in such a service should be on a higher scale than clinical salaries, as he felt that in this country administrators were not paid according to their capacity, and a scheme would succeed or fail by its administration.

In outlying areas Dr. Upjohn considered that a salaried service would be of advantage, and he quoted figures showing that doctors were attracted more to better class residential areas than to industrial, but he pointed out that doctors in industrial suburbs were hard workers with well-organized practices, who gave their patients an efficient service despite the inadequacy of hospital accommodation in those areas. It was rare now to operate in a private house, and if more accommodation was available more people would make use of it.

In reply to Colonel Ryan, Dr. Upjohn stated that the annual number of medical graduates from the University of Melbourne varied from forty to sixty and in recent years had been higher.

Many medical students followed their fathers in the profession, and he considered that the economic reward of medicine was the least of the motives impelling students to a medical career—interest was the main factor—but a less expensive course would attract more students. He did not, however, agree with the suggestion of the Chairman that the amount of the salary in a salaried service was unimportant, and maintained that a cheap service would be a poor one.

DR. ARTHUR BROWN, being sworn, explained to the committee his views on a salaried medical service and discussed his criticism of the National Health and Medical Research Council scheme as published in THE MEDICAL JOURNAL OF AUSTRALIA of October 31, 1942.

He stated that in Colac, where he practised, there was an ear, nose and throat specialist who also did general practice. He did not think there was need at present for specialist consultants in country districts, as the work was too general and there would not be enough for them to do. The present plan of consultants practising only in Melbourne was adequate, but if a scheme was developed later there might be need or justification for a specialist service in country districts. The witness drew a distinction between the consultant specialist and the specialist practitioner and considered it would be wrong for consultant specialists to be scattered about the country—they would need to be in large centres—and the fact that they had been designated to country centres in the National Health and Medical Research Council plan was evidence of faulty planning. Taking into account that in a salaried service the greater part of the work would be done by the junior medical officer, one senior and one junior medical officer, with the assistance of four female visitors, should be ample to carry out all the regular work in a D Class centre, and the allocation of personnel under the National Health and Medical Research Council scheme was tremendously extravagant—an error in planning which he attributed to the fact that the scheme had been drawn up by medical men who were not in practice.

He could not say whether the health of the people in New Zealand had improved under the system of medical service operating in that country; but he had worked under the national health insurance scheme in Great Britain and thought that the work of doctors there was apt to deteriorate because of the large number of patients to be attended, whereas under the system of charging a fee of 10s. 6d., good service of a higher standard was guaranteed, as a doctor would see probably only eight or nine patients in the time he would be required to see probably forty under the other system.

Dr. Brown stated that he was definitely opposed to the interposition of any financial interests, such as friendly societies, between doctors and government. He was of the opinion that, if a change was to be made in the system of medical practice, it would be wiser to have a frame-work ready to effect that change when the war was over, because problems of demobilization and repatriation would arise, but it would be impossible to guarantee the success of any new system without the goodwill of the medical profession, which was not only reluctant to face a change, but also had the promise of the Minister of Health that nothing would be done until after the war.

He did not know what were the prospects of unanimity in the profession in relation to any changes in the present system, as all the States were considering various schemes, including a salaried scheme, and discussions were still at a very early stage.

His experience after the last war did not lead him to believe that young doctors going straight into the Services after graduation would be at a disadvantage at the end of this war.

Dr. Brown emphasized his opinion that if the present system was to be changed, the change should not be a half-measure, but should be designed to remove the faults of that system and to provide, for example, for the better distribution of doctors and better cooperation between doctors and enable all men in actual practice to do public health work without feeling that it was unpaid work competing with paid.

Whether a salaried system of medical service would be for the betterment of the country depended on the spirit in which it was managed, and he could see no reason for the inclusion of laymen in the controlling body, which should be composed of professionally trained men not subject to any sort of political pressure.

Replying to Senator Arnold, Dr. Brown stated that he did not agree with Dr. Ashton's views that the Councils of Branches of the British Medical Association did not represent the feeling of members of the profession.

Dr. Brown stated that he saw 40 or 50 patients in a day and he did not know how, in any salaried service, it would be possible to prevent the popular doctor from being overworked, but he considered it a bad principle in any service to refuse patients the choice of doctor. From the point of view of a laymen, changes were desirable because governments everywhere were realizing that individual and national health, like education, were their concern. He would not agree that under the present system richer people had

better care. He was convinced that the poorer classes were very well looked after, and in over twenty-five years of practice could not remember one person debarred of decent care by lack of income. Although, however, the poor did get good medical attention, other factors—clothing, nutrition, housing—came into the picture.

Relying to Colonel Ryan, Dr. Brown stated that he thought the present system of medical practice was reasonably satisfactory, but there were anomalies. He thought that the question of maintaining personal relationship between doctor and patient under a salaried system would depend on the nature of that system.

In reply to Senator Cooper, Dr. Brown stated that he believed it would be possible to get the views of men in the Services by questionnaire, but he doubted the value of the results. He felt that the ideas of the general profession could be obtained through the professional organizations and opposed the suggestion of Dr. Ashton that representatives might be elected, as he thought it unnecessary for the Government to go past the Federal Council of the British Medical Association, which was an existing democratic organization.

The witness thought it would be reasonable to plan for the future if the Government decided to make a change in the system of medical practice on its own responsibility, but if that was done, the goodwill of the profession might not be retained, and he stressed the necessity for full consultation with the profession. He was sure that the Federal Council had the trust and respect of the Branches and was the proper body for the Government to consult.

He felt that in any scheme one of the biggest dangers was the sterilization of keenness and imagination, and that danger could be avoided only by proper control, which would make or mar the service. For that reason he advocated decentralization of control, with practising men participating on a part-time basis. Promotion under such a system would be on recommendation by area committees to State committees, and the function of the Federal Medical Commission, which he advocated, would be one of coordination. The members of the State Commissions of Survey, which he had suggested, should be actively practising medical men not associated with State health departments. (Dr. Brown then read to the committee a letter from a medical student at the Middlesex County Council Hospital, which had a salaried medical staff and worked successfully.)

Dr. Brown was of the opinion that the system of specialized services for outback areas proposed in the National Health and Medical Research Council plan was unrealistic. It was not possible to bring specialist services to isolated areas by planting twelve specialists at, say, Longreach. Modern transport would overcome many of the difficulties, but under any scheme people in the outback would always be at a disadvantage. Under a salaried service it would be easy to take specialists to patients, but locating specialists in the outback would be throwing away brainpower and manpower with both hands, as consultants must remain in the cities near teaching hospitals.

Relying to the Chairman, Dr. Brown stated that in the establishment of any new system four steps were necessary: (a) a complete survey of the medical profession, (b) the establishment of controlling bodies, (c) the taking over of the profession into a salaried service without any doctors necessarily being moved, (d) development of the scheme as needs developed.

He insisted that assets represented in practices and their equipment were important and the question of compensation must not be overlooked in the capital expenditure associated with the introduction of a salaried service. He thought that in such a service there should be specialization amongst general practitioners, but reiterated his opinion that consultant specialists must be located in cities, with the exception, perhaps, of radiologists, pathologists and oto-rhino-laryngologists.

He considered that under the National Health and Medical Research Council plan, nine out of the twelve specialists designated for a D Class centre would have nothing to do, as general practitioners would perform the bulk of the work.

When asked if he knew of any reason for the change in New Zealand from capitation to fee-for-service basis, Dr. Brown read an article by a special correspondent which appeared in THE MEDICAL JOURNAL OF AUSTRALIA on November 22, 1941, which made it clear that the change resulted from professional opposition to the capitation system.

Explaining the method of practice in Colac, Dr. Brown said that the men in that town worked as a group with consulting rooms in the district hospital with radiological and pathological facilities readily available.

DR. H. BOYD GRAHAM, being sworn, informed the committee that the opinions he would place before it were personal and not those of any organization with which he was connected.

In his conception of medical and hospital services for the community, voluntary hospitals and private medical practice were so valuable that, irrespective of any other provisions which might be made, they should be retained.

The Government should try to get private practitioners to do what they could to eliminate waste in the present system, for example, by the establishment of group practices, and in that way costs to individual patients could be reduced.

Similarly, much could be done with hospitals. Neither doctors nor hospitals desired to make unreasonable profits, and few private hospitals made much profit, as competition and the ability of people to pay were limiting factors.

People liked private doctors and the intimacy of medical relationships was important. In a departmental system, records and dossiers would abolish the element of privacy, and the fact that private doctors were independent persons was a bond with patients who looked upon them as guides, philosophers and friends. Things would be different in a national service, and he felt it would be a grave step to impose a nationalized profession upon the people. He had had a fairly wide experience of practice of different types, and in friendly society contract practice there were two groups of patients—one, the members of which did not come to the doctor because they thought they would be bothering him and, as a consequence, serious illnesses might not be detected in their early stages, and, at the other extreme, a group the members of which visited the doctor with every trifling ailment and so ran the risk of serious illness being overlooked. Although doctors in general gave friendly society members a good service, that type of practice was against the interests of the community, as, to obtain reasonable remuneration, doctors, especially in the industrial districts, had to accept too many patients, and an extension of the system would accentuate its disadvantages.

There was no question that, in the industrial suburbs particularly, the establishment of clinic facilities, either private, municipal or State, would improve conditions. Such clinics, staffed by part-time salaried officers, could provide investigational services, and sufficient hospital beds should be available to meet the demands of the community, especially for midwifery, surgery and illness difficult of diagnosis.

It would be difficult to finance such hospitals from private sources, but whenever it was possible for people to pay the whole cost of their treatment, there should be voluntary hospitals and private doctors because the community should not be pauperized and made the recipient of charity.

What could be done to provide hospital accommodation which people could pay for? In Victoria the Bush Nursing Association had established over sixty hospitals which were registered as private hospitals and were managed by local committees with directional control from the Council of the Bush Nursing Association. If such hospitals were absorbed into any system established by the Government, their management should not be interfered with beyond the giving of general directional guidance regarding standards, wages and charges.

Dr. Graham thought that Victoria had insufficient hospital accommodation and that it was the duty of the State to survey the position and determine whether the existing distribution of hospitals was adequate. The Charities Board had done a good deal, especially in the country, but the suburbs of Melbourne were not properly provided for.

A hospitals commission might be established with the duty of surveying and reporting on the needs of the community in liaison with a medical coordinating committee, and in that way plans could be dovetailed with the requirements of medical practitioners. Maternity beds should be near the homes of patients and their doctors, who would be, in most cases, general practitioners. He considered that a "departmental" doctor would have little opportunity for learning the domiciliary side of medicine, which was valued so greatly by the profession.

Relying to Mr. Perkins, Dr. Graham stated that he believed in decentralization of hospitals. Those in the community who were too poor to join friendly societies obtained their medical service from public hospitals, but he would not like to see that system of care extended, and thought the Government should ask the Federal Council of the British Medical Association to devise some means of reducing the present cost of medical care.

In reply to Senator Arnold, Dr. Graham stated that there were fewer doctors in industrial areas on account of the less pleasant conditions of work, but he thought that doctors in those areas did try to keep up with developments in medicine.

He thought that the provision of superannuation in a salaried service would not particularly attract doctors to such a service, as many men would prefer to carry on under the present system and make their own arrangements for maintaining themselves after retirement.

In his practice among children he found it possible to establish a personal relationship with his public hospital patients, but it was difficult to do so in general hospitals.

Relying to Senator Cooper, Dr. Graham said he visualized the Government asking the profession to organize itself on business lines to reduce overhead costs.

In a salaried service, reduction of the scope of a doctor's work to the requirements of the position he occupied would be regrettable, and, while he agreed that under the National Health and Medical Research Council scheme, private practice might continue, except in remote areas, he felt it was unnecessary to do anything which would abolish private practice, as probably not 10% of doctors would require subsidies to ensure adequate care to all the community.

Even if a general scheme of free salaried medical service were established, he thought many persons would still prefer to seek their medical care privately—in fact, private doctors would probably be required to look after the dissatisfied customers of the salaried scheme.

He was opposed to a free medical service and did not think it would benefit the health of the community; in fact, its introduction would be a wasteful extravagance.

Relying to Colonel Ryan, the witness said that the costs of medical care could be spread by contributory schemes and reduced by the formation of group practices, the elimination of unnecessary travelling, the provision of more hospitals and the establishment of "special purpose" clinics, for example, for venereal diseases and diabetes.

He thought that it would be unlikely that the secrecy now obtaining between doctor and patient could be maintained in a departmental system. He would not say that lodge patients were pauperized, but the lodge system meant practically free service to many who could pay more. In such a system the lower the capitation fee, the more patients were accepted by the doctor, with deterioration of the service.

Asked by the Chairman why, if the medical profession admitted need for improvement in the present system, it waited to be asked to effect reforms, Dr. Graham stated that he thought the profession was waiting to learn the intentions of the Government and, until they were known, it would be useless to embark on any plans.

Dr. Graham then proceeded to expound to the committee his views on child welfare. He thought the time was ripe for extension of interest in babies and young children, which could be done during the war, and there was no question that lack of careful guidance and control of the lives of the young had led the community to its present pass.

In Victoria there were over 250 infant welfare clinics staffed by trained nurses, the cost being shared between the Government and the municipalities, and although few were under medical direction, the results in his own life time had been remarkable, with a reduction of the infant death rate from 75 per 1,000 to 34 per 1,000, a rate which was unlikely to be improved until the clinics were provided with enlightened medical guidance.

He thought that just as people were compelled to educate their children, they should be compelled to obtain guidance for their babies. Pre-school children between two and six years had also been neglected and mothers and grandparents allowed children to bring themselves up with consequent damage to their characters. A number of trained people existed who knew that more could be done for young children if their parents were guided, and kindergartens and nursery schools were needed.

Victoria had a Free Kindergarten Union and an Association of Creches, which had both done good work; but the former body, with some twenty free kindergartens, handled only 3% of children and, as the number which could be properly handled by a trained director was only 20 to 24, and with the aid of an assistant, not more than 50, many of the kindergartens with up to 70 children deteriorated in value. Religious bodies with kindergartens catered for another 2% of young children, but 95% of them lacked any facilities.

The simplest method of dealing with the problem would be to link pre-school child guidance clinics on to the infant welfare centres and to develop kindergartens and nursery schools. It was essential that personnel be properly trained, and as training required three years, that would be the first thing on which to concentrate.

The feeding of children was also a national problem, and Australia would not have good citizens unless they were properly fed. Dr. Graham considered that compulsory super-

vision of the feeding of children by enlightened instructors should be a feature of any child welfare scheme. Responsibility for the proper feeding of children of school age should not be a function of the Education Department, but of the municipalities, and each municipality should have a children's centre.

In reply to Colonel Ryan, Dr. Graham said he could see no reason why the facilities he advocated should not be developed during the war. Not much labour or building material would be required as there were already 265 infant welfare centres in existence, and plenty of spare rooms in halls were available.

If the Commonwealth would guarantee the necessary money to the municipalities, a lot could be done.

He entirely disagreed with those who maintained that kindergartens and nursery schools broke up the family. On the contrary, mothers found them an untold blessing, and children who attended them went on to junior schools much better fitted to receive instruction. Further kindergarten principles should be adopted in the home, and the controllers of kindergartens sought the cooperation of mothers.

Relying to Senator Cooper, Dr. Graham said it would not be a strain under present conditions to do what he advocated. The baby health centres were already caring for the infants, and with a directional plan from above the municipalities should be made responsible for what was necessary. He did not know whether the compulsion he suggested would be welcomed by the community, but he did not think the country could afford to have a single baby improperly brought up, and parent guidance clinics could be started at once.

In reply to Senator Arnold, Dr. Graham said that improper feeding was not characteristic of any one social class.

In proper developmental centres, catering for the social, physical, moral and intellectual development of young children, a midday meal should be provided and, for older children, supplementary nourishment should be available, but not necessarily in the school itself. It was difficult to persuade some of the lowest type of mothers to attend baby health centres, but many of them were glad to cling to the centres.

Lower wage earners as a class were, in his experience, most solicitous for the welfare of their children.

The medical service that he thought should be available at centres would be mainly preventive, and would attend to the immunization of children against diphtheria and other infectious diseases. Regular examinations of children were more important than those of adults, and such examinations should be not only to detect physical defects, but also to investigate behaviour and other problems, and should be made by trained paediatricians who could be employed on a part-time salary basis.

In reply to Mr. Perkins, who stated that the Far West Scheme in New South Wales had revealed many defects in children, Dr. Graham pointed out that the ascertainment of disease must be linked up with correctional facilities, and that education and guidance of parents were needed.

In Victoria kindergarten children were examined and their parents followed the examining doctors' advice.

Crippled children were helped by the Society for Crippled Children, and he considered that lay cripples should be assisted just as much as those crippled on war service.

Relying to the Chairman, Dr. Graham said that care of children in the institutions he advocated would result in the education of parents, and in his experience those able to take advantage of the existing limited facilities reacted most favourably to them, and there was a huge demand for their extension.

Dr. Graham informed Colonel Ryan that he attributed the small families of today to the desire of parents to do their best for their children and to the late age of marriage.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes et cetera have been promulgated in the *Commonwealth of Australia Gazette*, Number 331, of December 23, 1942.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The following Flight Lieutenants (Acting Squadron Leaders) are promoted to the rank of Temporary Squadron

Leader, with effect from the dates indicated: W. C. T. Upton (3455), 7th November, 1941; E. V. W. Pockley (3752), 5th January, 1942.

Flight Lieutenant C. R. Laing (3407) is transferred from the Reserve, with effect from 14th September, 1942.

Temporary Flight Lieutenant R. M. Alder (1285) is granted the acting rank of Squadron Leader whilst occupying a Squadron Leader post with effect from 1st October, 1942.—(Ex. Min. No. 221—Approved 22nd December, 1942.)

Reserve: Medical Branch.

The following are appointed to commissions on probation with the rank of Flight Lieutenant, with effect from the dates indicated: Clifton Murray Maxwell, M.B., B.S. (6828), Verner William Threlkeld, M.B., B.S. (6829), 17th September, 1942; Douglas Burland Duffy, M.B., B.S. (6830), 20th September, 1942.—(Ex. Min. No. 219—Approved 22nd December, 1942.)

DECORATIONS.

We have been notified by the Director of Medical Services of the Royal Australian Air Force that Flight Lieutenant Joseph Anthony Horan, of the Royal Australian Air Force Medical Branch, has been mentioned in dispatches.

CASUALTIES.

ACCORDING to the casualty list received on December 23, 1942, Major I. F. Vickery, A.A.M.C., of Bellevue Hill, is reported to have been killed in action.

Australian Medical Board Proceedings.

VICTORIA.

THE following letter has been received by Dr. H. Boyd Graham, Editor's representative in the State of Victoria.

Chief Secretary's Office,
Melbourne, C.I.
21st December, 1942.

Dear Sir,

I have been directed by the Medical Board of Victoria to forward the attached letter from Dr. A. M. Hill explaining his part in the court proceedings "The Crown versus Dr. John Heath".

As the Board considers that Dr. Hill has been placed in a false position and has been gravely misrepresented by the Press, it would be pleased if his letter could be published in the Medical Journal as business of the Board.

Yours faithfully,

W. K. NEVIN,
Secretary, Medical Board of
Victoria.

Dr. Boyd Graham,
14 Collins Street,
Melbourne.

317 Glenferrie Road,
Malvern, S.E.4,
November 20, 1942.

The Secretary,
The Medical Board of Victoria,
Treasury Buildings.

Dear Sir,

I wish to bring to your notice the fact that in the daily Press (*The Herald* of the 16th of November, and *The Age* and *The Sun* of the 17th of November), reports of the case of the Crown versus Dr. John Heath have given an entirely erroneous impression of my participation in the case.

The reports in these papers would indicate that I acted as a medical consultant to Dr. John Heath and that I advised the termination of pregnancy in his patient. This is quite untrue. I believe, further, that the impression so given to the public is damaging to my professional reputation as a specialist and consultant, and I therefore wish to place the facts before you.

On October 7th, at about 4.30 p.m., I was approached outside my rooms at 111 Collins Street by Dr. John Heath, who was in the company of his nurse. In the course of a few minutes' conversation we discussed the general medical indications for the therapeutic termination of pregnancy, and amongst certain well recognized possible indications were mentioned two, threatened suicide associated with a true psychosis, and albuminuria due to progressive or permanent renal damage. The combination of these two indications constituted the medical grounds on which, as stated in court, Dr. Heath decided to terminate pregnancy in his case.

Although Dr. Heath stated later that this part of our conversation referred in his mind to this particular patient, the discussion was to me a purely general one, of an academic nature, and had no reference to any particular patient.

I have never proposed a definite line of conduct, nor have I acted in the capacity of a medical consultant in any case in which I have not first personally seen and examined the patient.

In the case herein referred to, I at no time saw or examined the patient. I was, in fact, unaware that such a patient existed until the evening of her admission to the Women's Hospital, some hours after the operation for the termination of pregnancy had been performed.

Although requested by the Defence to give evidence on behalf of the accused, I consistently refused, and at no time did I make or sign a statement relative to this particular patient.

On the day before the trial opened I was presented with a subpoena by the Defence. At the trial I naturally expected to be interrogated by both the Defence and the Crown, but following psychiatric evidence by Dr. Albiston on behalf of Dr. Heath, the case was dismissed without my being called to give evidence. I thus had no opportunity of stating my true position.

These details are known to the Honorary Staff of the Women's Hospital, and the Chairman of the Staff, Dr. W. G. Cuscadene, will corroborate my assertion that both in my private medical capacity and as an honorary obstetrician to the Women's Hospital my professional position has been gravely misrepresented in the Press.

I am,

Sincerely yours,

ARTHUR M. HILL.

QUEENSLAND.

The undermentioned has been registered, pursuant to the provisions of the *Medical Acts*, 1939-1940, of Queensland, as specialist in surgery:

Brown, Robert Graham, "Camden", Toorak Road, Hamilton, Queensland (L.R.C.P., London, M.R.C.S., England, 1912, F.R.A.C.S., 1928).

The following additional qualification has been registered:

Lynch, John Aloysius, on active service (M.B., B.S., 1925, Univ. Melbourne), M.S., 1942 (Univ. Queensland).

The undermentioned has been registered, pursuant to the *Medical Acts*, 1939-1940, of Queensland, as a duly qualified medical practitioner:

Ferrari, Louis Norman, M.B., B.S., 1942 (Univ. Sydney), Mater Hospital, Brisbane, Queensland.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Sheehan, Joseph Lexden, M.B., 1907, M.D., 1929 (Univ. Sydney), 20, Harriette Street, Neutral Bay.

Watson, Shane Andrew Clarke, M.B., B.S., 1939 (Univ. Sydney), 34, Beaconsfield Road, Balmoral.

Medical Appointments.

Dr. Albert Oscar Vincent Tymms has been appointed, pursuant to the provisions of the *Workmen's Compensation (Broken Hill) Act*, 1920-1942, to be Deputy Chairman of the Medical Authority constituted under that act.

Books Received.

"A Text-Book of Bacteriology", by R. W. Fairbrother, D.Sc., M.D., F.R.C.P.; Fourth Edition; 1942. London: William Heinemann (Medical Books) Limited. 9 $\frac{1}{2}$ " x 6", pp. 473, with illustrations. Price: 17s. 6d. net.

"Midwifery", by Ten Teachers, under the direction of C. White, M.D., B.S. (London), F.R.C.P. (London), F.R.C.S. (England), F.R.C.O.G., edited by Sir Comyns Berkeley, C. White and W. Gilliat; Seventh Edition; 1942. London: Edward Arnold and Company. 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", pp. 570, with many illustrations, some of which are in colour. Price: 18s. net.

"Medical Jurisprudence and Toxicology", by J. G. Gilster, M.D., D.Sc.; Seventh Edition; 1942. Edinburgh: E. and S. Livingstone. 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", pp. 680, with 132 illustrations, some of which are in colour. Price: 28s. net.

Diary for the Month.

JAN. 12.—Tasmanian Branch, B.M.A.: Branch.
JAN. 22.—Queensland Branch, B.M.A.: Council.
JAN. 28.—South Australian Branch, B.M.A.: Branch.
FEB. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
FEB. 3.—Western Australian Branch, B.M.A.: Council.
FEB. 4.—South Australian Branch, B.M.A.: Council.
FEB. 5.—Queensland Branch, B.M.A.: Branch.
FEB. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.I.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association; Proprietary Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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